

**Public Information Materials
Former MCAS El Toro**

1/31/07

**Installation Restoration Program Sites 3 and 5
Proposed Plan Public Meeting**

**Held at Irvine City Hall
Irvine, CA**

Materials/Handouts Include:

- Public Meeting Agenda – 1/31/07 Sites 3 and 5 Proposed Plan Public Meeting
- Proposed Plan for Closure of Two Inactive Landfills at Sites 3 and 5, Former Marine Corps Air Station, El Toro – January 2007.
- *Presentation* – Installation Restoration Program Operable Unit 2C Site 3, Original Landfill and Site 5, Perimeter Road Landfill, Former MCAS El Toro, Proposed Plan Summary, presented by Richard Pribyl, Remedial Project Manager, BRAC Program Management Office West.
- Public Meeting Transcript – Former Marine Corps Air Station, El Toro, Public Meeting, Installation Restoration Program Sites 3 and 5, Irvine City Hall, Irvine, California. Recorded by: Laura Maes-Dunne, CSR No.9836.
- Former MCAS El Toro – Public Comment Form for Proposed Plan – Excavation and Off-Site Disposal for IRP Sites 3 and 5.
- Former MCAS El Toro – Meeting Evaluation for Public Meeting Sites and 5 Proposed Plan for Capping Landfills – January 31, 2007.

Former MCAS El Toro Public Meetings

Wednesday – January 31, 2007

6:30 – 7:30 p.m.

***Irvine City Hall, One Civic Center Plaza, Irvine
Conference and Training Center***

AGENDA – 6:30-7:30

Sites 3 and 5 Proposed Plan Public Meeting

Public members that are unable to attend please call Darren Newton, Marine Corps/Navy RAB Co-Chair at (949) 726-5398 or (619) 532-0963.

Question and Answer (Q&A) Ground Rules

- ***Q&A follows proposed plan presentation; time designated for presentations includes Q&A time.***
- ***After adjournment, Marine Corps/Navy representatives are available to answer more questions.***

This meeting provides the public with the opportunity to learn more about the Sites 3 and 5 Proposed Plan for capping the landfills with a cover that meets *California Code of Regulations Title 27* and to provide oral or written comments on the plan.

6:30 – 6:45	<i>Meet Navy and Regulatory Agency Representatives</i>
6:45 – 7:05	<i>Proposed Plan Summary</i>
7:05 – 7:15	<i>Clarifying Questions</i>
7:15 – 7:30	<i>Public Comment</i>
7:30	<i>Meeting Adjournment</i>



PROPOSED PLAN

for Closure of Two Inactive Landfills at Former Marine Corps Air Station, El Toro

January 2007



Navy Proposes New Preferred Remedy for Landfill Closure at Sites 3 and 5

PROPOSED PLAN SUMMARY

This Proposed Plan presents the Navy's preferred remedial alternative for Installation Restoration Program, Operable Unit 2C, Site 3, Original Landfill, and Site 5, Perimeter Road Landfill at Former Marine Corps Air Station (MCAS) El Toro. The **preferred remedy, Alternative 4d**, calls for capping these inactive, non-operational landfills with a cover that meets applicable or relevant and appropriate (ARARs) for closure (see page 16 for discussion).

This Proposed Plan summarizes the site history, environmental investigations, risk assessments, and remedial alternatives evaluation conducted at Sites 3 and 5 and describes the basis for choosing the preferred alternatives.

This Proposed Plan (2007 Proposed Plan) is a revision to a Proposed Plan (1998 Proposed Plan) that the Navy issued for public comment in 1998. Based upon new information, the Navy, working collaboratively with federal and state regulatory agencies, prepared a **Feasibility Study* Addendum Report that modified and reevaluated remedial alternatives for Sites 3 and 5, previously evaluated in the Draft Final Phase II Feasibility Study Reports for Sites 3 and 5 (September 1997).

The Navy invites you to review and comment on the 2007 Proposed Plan. Detailed reports covering the environmental investigations and the development and evaluation of remedial alternatives are available for public review at the MCAS El Toro Administrative Record file on-station and the Information Repository at the Heritage Park Regional Library in Irvine, California (see page 19 for location information and a list of the key reports). After all public comments on this 2007 Proposed Plan have been reviewed and considered, the final remedial alternative or remedy for Sites 3 and 5 will be selected and documented in the ***Record of Decision (ROD)***.

The cleanup or remedial objective of the Navy is to protect human health and the environment and meet all applicable or relevant and appropriate federal and state environmental laws and regulations for closure of landfills. Meeting this objective involves preventing people from coming in contact with the landfill materials and protecting the environment. The **preferred remedy, Alternative 4d**, calls for capping the landfills with a cover that meets the ARARs for closure of landfills, implementing institutional controls in the form of land use restrictions to limit access or activities at the sites to further protect human health

Opportunities for Community Involvement

30-Day Public Comment Period — January 22–February 21, 2007

We encourage you to comment on this Proposed Plan during the 30-day public comment period. Comments may be submitted orally or in writing at the January 31, 2007 public meeting, or by regular mail, e-mail, or fax. Written comments should be submitted to Mr. Darren Newton, BRAC Environmental Coordinator, MCAS El Toro, 7040 Trabuco Road, Irvine, CA 92618-1700, and **be sent or postmarked no later than February 21, 2007**; contact information is listed on page 19.

Public Meeting — Wednesday, January 31, 2007 at 6:30 p.m.

Irvine City Hall, Conference and Training Center, One Civic Center Plaza, Harvard at Alton Parkway, Irvine, California

You are invited to this community meeting to discuss the proposed closure alternative for Sites 3 and 5, two inactive landfill sites at Former MCAS El Toro. Navy representatives will make a presentation covering the proposed alternatives. You will have the opportunity to provide questions and formally comment on this Proposed Plan.

*Words in ***bold italic*** typeface are defined in the glossary on page 18.

and the environment, and conducting long-term environmental monitoring for up to 30 years. Long-term monitoring would ensure the landfills contain waste materials within landfill boundaries, do not impact groundwater, or release **landfill gas** into the air at concentrations greater than regulatory thresholds. Installation of the landfill caps would reduce infiltration of surface water into the landfills to prevent formation of **leachate**. The landfill closure remedy does not require cleanup of groundwater; however, monitoring of groundwater to assess the effectiveness of the remedy.

The covers would include vegetation and be designed to meet the specific characteristics of each landfill site to control erosion and slope instability. Landfill gas systems would be installed at each site to collect and dispose of gas that may be created after the landfills are capped. At Site 3, identified waste areas would be consolidated into one area followed by installation of the landfill cap to contain these materials. Wastes at Site 5 are contained in a single area, so waste consolidation would not be necessary.

MCAS El Toro was listed on the National Priorities List in 1990. The Navy entered into a Federal Facility Agreement (FFA) with U.S. Environmental Protection Agency (U.S. EPA), California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC), and Cal/EPA's Santa Ana Regional Water Quality Control Board (RWQCB) in 1990. The MCAS El Toro Base Realignment and Closure (BRAC) Cleanup Team, established in 1993, is composed of representatives of the Navy, U.S. EPA, DTSC, and Santa Ana RWQCB. The Regulatory Agencies have carefully evaluated environmental data, technical information, and remedial alternatives for Sites 3 and 5 and concurs with the Navy's recommendation of the **preferred remedy, Alternative 4d**.

Background Summary and Overview—Sites 3 and 5

This section presents a description of Sites 3 and 5, an overview of key milestones, and an update on the current status of the sites. The Navy prepared this Proposed Plan to inform the public of the preferred remedy modifications that have been made and to seek public comment on the remedial alternatives.

Sites 3 and 5 are located in the eastern portion of the former Station and are shown on the map on page 3. A list of key environmental and technical reports discussed below is presented on page 19.

Site Descriptions

Site 3, Original Landfill, the original landfill at the former Station, operated as a trench-and-fill disposal facility from 1943 to 1955. Site 3 encompasses approximately 11 acres, and is situated between Irvine Boulevard and North Marine Way. Agua Chion Wash, an unlined drainage channel, crosses the site. Prior to burial, wastes were burned at an incinerator to reduce volume. Record searches and interviews of former employees helped to initially determine waste types. Reportedly, any wastes generated on the former Station may have been disposed at Site 3; they may have included metals, incinerator ash, solvents, paint residues, hydraulic fluids, engine coolants, construction debris, oily wastes, municipal solid waste, and various inert solid wastes. Presently, infrastructure

at the site consists of concrete and asphalt pads and temporary structures associated with environmental field investigations.

Site 5, Perimeter Road Landfill, was operated as a trench-and-fill disposal facility from approximately 1955 until the late 1960s. Site 5 encompasses approximately 1.8 acres and is located in the eastern portion of the former Station near the foothills of the Santa Ana Mountains. The site is flat and is currently undeveloped. Wastes were often placed in a trench at the site, burned to reduce volume, and then covered with soil. Record searches and interviews of former employees assisted in determining the waste types, which may have included burnable trash, municipal solid waste, cleaning fluids, scrap metals, paint residues, unspecified fuels, oils, and solvents.

Remedial Investigation and Feasibility Study

An extensive **remedial investigation (RI)** was conducted in 1996 at Sites 3 and 5 to obtain data necessary to characterize the environmental conditions. Results were presented in separate Draft Final Phase II Remedial Investigation Reports (April 1997). The RI incorporated analyses of air, soil gas, soil, surface water, and groundwater to determine the nature of contamination present at and around each landfill. As part of the RI, human health and ecological risk assessments were conducted to deter-

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

FORMER MCAS EL TORO LOCATION MAP –
INSTALLATION RESTORATION PROGRAM SITES 3 AND 5

FOR ADDITIONAL INFORMATION, CONTACT:

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SENSITIVE

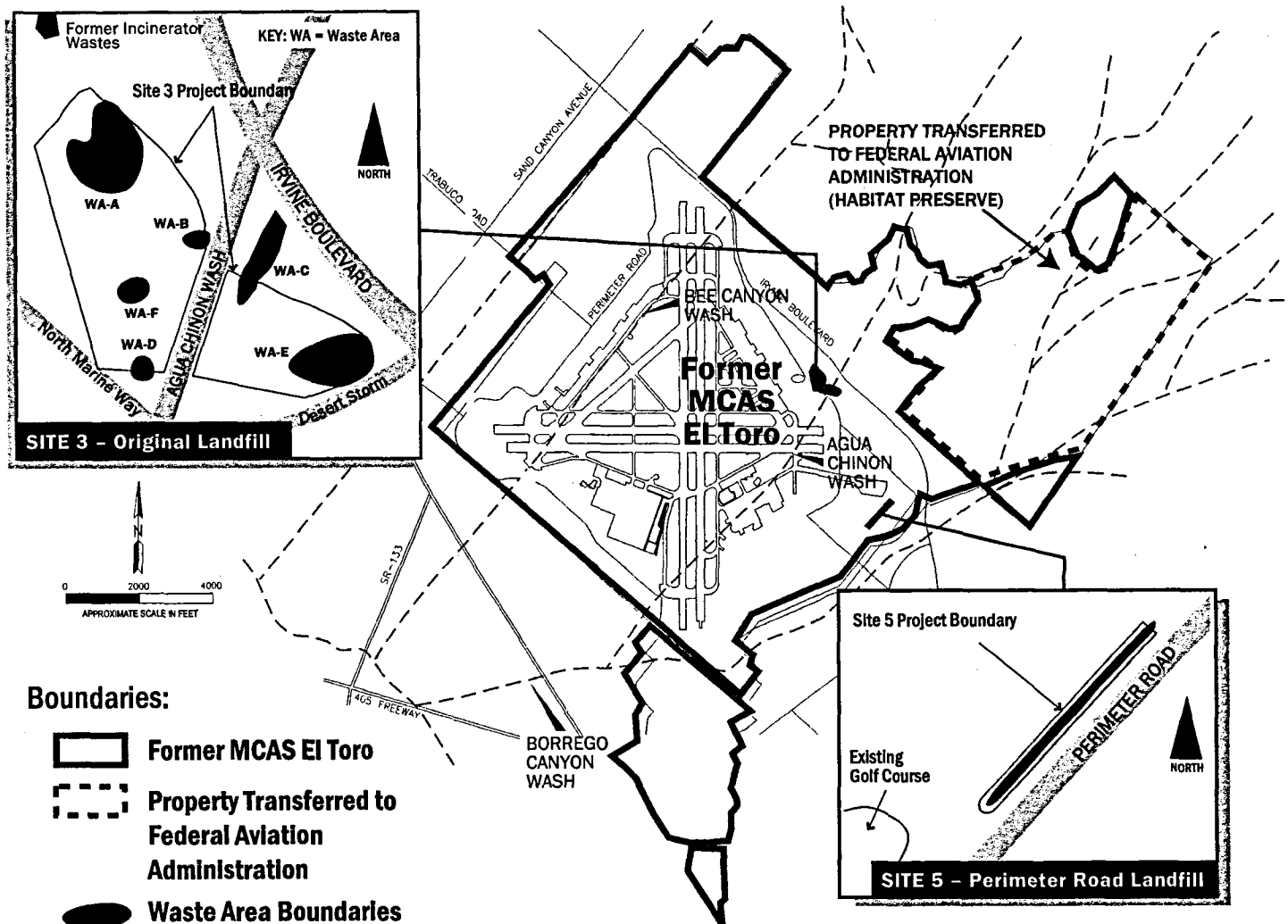
mine potential risks to human health and the environment from each landfill. Data obtained from the RI were used to determine remedial action objectives for the landfills. These objectives were used in the feasibility study to focus the development and detailed evaluation of remedial alternatives. As new environmental and technical information became available since issuing the 1998 Proposed Plan, the FFA signatories determined that the original remedial alternatives needed to be modified. As a result, this 2007 Proposed Plan was prepared to inform the public of the modifications and to seek out public comment.

During the RI, air samples were collected to determine if landfill gases were being released to the atmosphere.

Air sampling showed that *volatile organic compounds (VOCs)* in landfill gas are present at low concentrations near the ground surface only over the central portions of the landfills.

Soil gas samples were collected at the surface in the central portions and at the perimeters of the landfills to evaluate whether localized areas with elevated concentrations of chemicals were present and whether methane or other landfill gases were moving beyond the landfill boundaries. VOCs were also detected in soil gas samples, but no localized sources of high concentrations of landfill gases were found.

Former MCAS El Toro Location Map — Installation Restoration Program Sites 3 and 5



At both sites the waste areas have been revised based on information obtained from supplemental site characterization activities.

SENSITIVE

Soil samples were also collected at depth intervals at the landfill boundaries to determine whether contaminants from the landfills were moving toward groundwater. Shallow soil samples were collected to provide data for the human health and ecological risk assessments. Soil sampling indicated the presence of VOCs, *semivolatile organic compounds (SVOCs)*, *petroleum hydrocarbons*, and *metals* that could contribute to the formation of leachate.

Air and soil gas sampling confirmed that controls are not needed to protect against landfill gases due to their low concentrations.

Groundwater monitoring wells were installed to evaluate whether contaminants were impacting groundwater at the site. To sample for leachate directly underneath the landfills, lysimeters (devices that collect moisture in soil) were installed using slanted borings from the landfill perimeter. A subsequent evaluation of metals present in groundwater at the Sites 3 and 5 landfills concluded metals were a result of natural, ambient conditions; therefore, no action is necessary for groundwater.

Although wastes have not been disposed of at the landfills for many years, the RI showed that landfill wastes have the potential to impact the environment at these sites if no actions are taken to prevent erosion of the existing landfill covers and to minimize infiltration of water into the landfills. Results show that any contaminants that could be derived from landfill wastes were not found outside the boundaries of the sites.

The FS was completed in 1997 and results were presented in separate Draft Final Phase II Feasibility Study Reports for Sites 3 and 5 (September 1997). U.S. EPA's presumptive remedy approach, used at other landfill sites throughout the country, guided the development and evaluation of remedial alternatives during the FS process. The presumptive remedies of landfill capping, institutional controls (deed and access restrictions), and long-term monitoring were used to develop six remedial alternatives.

The six remedial alternatives, some with optional components, were evaluated in the FS process using the nine criteria as required in the federal National Oil and Hazardous Substances Pollution Contingency Plan (NCP): 1) overall protection of human health and the environment; 2) compliance with ARARs; 3) long-term effectiveness and permanence; 4) short-term effectiveness; 5) reduction of toxicity, mobility, or volume through treatment; 6) implementability; 7) cost; 8) state acceptance; and 9) community acceptance. Alternative 1, No Action, served as a baseline to which the other alternatives were compared and evaluated. See page 13 for information on these nine evaluation criteria.

1998 Proposed Plan and 1999 Draft Record of Decision

The 1998 Proposed Plan was issued in June 1998 to present the results of the development and evaluation of remedial alternatives conducted during the FS, to present the Navy's preferred alternative for final closure of Sites 3 and 5, and to solicit public comments. A public meeting was held and comments were received from the public during the 30-day public comment period. Based on an evaluation of all comments received, Alternative 3, Single-Layer Soil Cap with Institutional Controls and Monitoring, was identified as the selected remedy for final closure of the sites and was documented in the Draft Record of Decision (ROD), Operable Unit 2C, Sites 3 and 5 (March 1999). The selected remedy presented in the Draft ROD provided a balance among the alternatives with respect to the nine NCP evaluation criteria.

Supplemental Site Characterization

Additional site characterization was completed in 2004 to further refine the landfill boundaries and to determine if additional engineering and/or institutional controls would be appropriate for Sites 3 and 5. Trenching and soil gas sampling were used to reevaluate the volume and extent of waste in the landfills and to refine the landfill boundaries. Trenches were dug to visually inspect the subsurface and to monitor for chemical vapors. Landfill gas (soil gas) monitoring wells were also installed at the perimeters of the landfills to confirm the absence of landfill gas at the boundaries and to confirm that landfill gas migration was not occurring.

At Site 3, supplemental site characterization results confirmed that there are approximately 30,000 *bank cubic yards* of waste. Bank cubic yards are defined as the undisturbed in-place volume of waste. This is significantly less than the previous estimate of 163,500 to 243,000 bank cubic yards of waste presented in the Draft ROD. The waste placement boundary was revised to include an area outside of the previously estimated landfill boundary. The estimated thickness of the wastes ranges from 1 to 18 feet, while the existing cover thickness is estimated to range from less than 1 foot to 7 feet.

At Site 5, results indicated there are approximately 18,000 bank cubic yards of waste. The estimate included in the Draft ROD was approximately 40,000 bank cubic yards. The waste placement boundary was revised slightly outward at the north end of the landfill and slightly inward on all other sides. The thickness of the waste ranges from less than 1 foot to a maximum of 15 feet, while the existing cover thickness ranges from less than 1 foot to 8 feet.

Landfill gas monitoring at the perimeters of and within the Sites 3 and 5 landfill boundaries indicates that landfill gases are at concentrations that would not typically require

landfill gas controls. Based on the results of this investigation and an underlying concern for potential landfill gas migration, the FFA signatories and the California Integrated Waste Management Board (CIWMB) agreed that a 100-foot buffer zone (comprised of a 50-foot compliance zone and an additional 50-foot buffer) would be established around the landfills if both passive and active landfill gas control systems were incorporated into the remedies for Sites 3 and 5. Within this 100-foot land-use restriction buffer zone, construction of structures would require concurrence of the FFA signatories and the CIWMB. The landfill gas control systems would be designed to comply with the *California Code of Regulations* Title 27 substantive requirements for preventing and/or minimizing landfill gas concentrations and the potential migration that may occur.

Radiological Investigations

Radiological evaluations of Sites 3 and 5 were conducted in 2000, 2001, and 2004. A historical radiological assessment was conducted in 2000 throughout the former station to identify potential, likely, or known radioactive source material or contamination. This assessment used information obtained from records searches and interviews of former station employees, and focused on identifying sites that would need further evaluation to protect human health. **Radium-226 (Ra-226)**, a radioactive metallic element, was identified as a chemical of potential concern (COPC) due to its use in luminescent paint used for aircraft dials, gauges, and other equipment. Based on the results of the historical radiological assessment, the surface areas within Sites 3 and 5 were recommended for further investigations including radiological scan surveys and soil sampling.

Radiological scan surveys at Sites 3 and 5 included scanning the entire surface using portable instruments capable of detecting gamma radiation released during radioactive decay. In addition, soil samples from random areas at Sites 3 and 5 were analyzed to assess Ra-226 concentrations in surface soils (upper 18 inches) at these sites. Site-specific surveys and those conducted to determine the naturally occurring radiation level at the former Station were conducted in accordance with guidelines contained in the Multi-Agency Radiation Survey and Site Investigation Manual, which is used by the Nuclear Regulatory Commission, the Department of Energy, the Department of Defense, and U.S. EPA. To determine the naturally occurring background radiation level at the former station, radioactivity was measured and soil samples were collected from non-impacted reference areas with similar soil and geological characteristics to Sites 3 and 5 and at other reference areas across the entire station.

Statistical analyses were performed on the survey and sampling data from each site and it was determined that the radiation levels in surface soils resulted from natural

radioactivity contained in ground surface materials, including gravel and crushed rock. In addition, radiation dose models were used to calculate the dose and to assess the risk for each site. The risks due to Ra-226 in surface soil at these two sites were within the NCP-defined risk management range of 10^{-4} to 10^{-6} (see Table 1 on page 7).

Full results of the radiological investigations at Sites 3 and 5 are presented in a Final Radiological Release Report (see page 19). This report concluded that radionuclides on the surface areas of the sites, specifically Ra-226, were within background. However, due to the potential for the existence of small quantities of radioactive material in the subsurface at Sites 3 and 5, Ra-226 should be considered a COPC for response actions at these sites.

Feasibility Study Addendum

Based on the new site-specific data and technical information obtained from the Supplemental Site Characterization, an addendum to the FS Report was prepared to revise the remedial action objectives, and as necessary, modify and reevaluate the remedial alternatives previously developed for Sites 3 and 5.

The change from Alternative 3, the preferred remedy presented in the 1998 Proposed Plan, to Alternative 4d, Single-Barrier Cap with Institutional Controls and Monitoring with Synthetic Flexible Membrane Liner, is based upon the new information and the revised evaluation of alternatives presented in the Feasibility Study Addendum.

In summary, new information collected since the FS was completed confirmed that significant amounts of leachate are not being produced and that low concentrations of methane are present over the central portions of the landfills would not typically require landfill gas control. Additional trenching exercises confirmed the volume of waste at the landfills was less than previous estimates.

The inclusion of passive and active landfill gas control systems as a component of the remedial alternatives, as agreed upon by the FFA signatories and the CIWMB, added an additional measure of protection from the potential for landfill gas migration. These factors led to adding new remedial action objectives for landfill gas to protect human health, and resulted in a refinement and reevaluation of the remedial alternatives following the nine NCP evaluation criteria. The revised remedial action objectives and remedial alternatives are discussed starting on page 8.

Human Health and Ecological Risk Assessments

Human health risk assessments were conducted for Sites 3 and 5 as part of the RI. A human health risk assessment estimates the potential for health problems as a result of exposure to the chemicals at a site. Human health risk assessments estimate risks separately for exposure to cancer-causing chemicals (cancer risk) and for those chemicals that cause other health effects (non-cancer risk). Cancer risk is estimated as a probability of an individual developing cancer, and is expressed as the number of additional cancer cases within a given population. For example, a cancer risk probability of 2 in 100,000 (typically written as 2×10^{-5}) means that 2 additional cancer cases may occur in a population of 100,000 people as a result of exposure to cancer-causing chemicals at a site. Non-cancer risk is expressed as a total hazard index, presented as a whole number or a fraction.

To characterize risk and assist decision-makers in determining whether further action is needed at a site, the U.S. EPA has established a risk management range of 10^{-4} to 10^{-6} for cancer risk. Risks less than or equal to 10^{-6} are considered acceptable, and risks within the risk management range of 10^{-4} to 10^{-6} may be acceptable when site-specific factors are considered. A non-cancer risk hazard index equal to or less than 1 indicates limited potential for other adverse health effects to occur; greater values may require further evaluation. Table 1 (see page 7) presents the risk ranges established by U.S. EPA to protect human health.

An ecological risk assessment evaluates the potential effects on plants and animals from exposure to chemicals at a site. An ecological risk assessment was conducted only at Site 5, because Site 3 is covered with gravel or pavement and does not support wildlife habitat. For the ecological risk assessment, samples were also taken from a nearby uncontaminated reference site for comparison purposes.

RISK ASSESSMENT PROCESS

Risk assessments generally follow a four-step process:

- Step 1 - Analyze Contamination
- Step 2 - Estimate Exposure
- Step 3 - Assess Toxicity
- Step 4 - Characterize Site Risks

The ecological risk assessment focuses on potential reproductive damage and reduction in reproductive life span rather than the risk in developing cancer. This assessment also focuses on adverse effects on growth. Ecological risks are expressed in terms of a hazard index. A hazard index equal to or less than 1 indicates that no adverse effects on wildlife would be expected, greater values may require further evaluation.

Analyze Contamination

In Step 1, the Navy looked at concentrations of chemicals found at a site and other scientific studies on the effects these chemicals have on people (or animals, where human studies are unavailable). During the remedial investigation, only the environmental media (soil, air, and groundwater) surrounding the buried wastes, and not the actual wastes, were sampled for analysis. This approach is typical for landfills and is used throughout the country. Representative sampling of landfill materials is also not considered practical because of the variation in waste types found within landfills. Drilling into the landfills could also create a conduit for water to pass into the wastes and cause leachate to form that could impact groundwater.

Estimate Exposure

In Step 2, the Navy evaluated different ways that people potentially could be exposed to the chemicals identified in Step 1. This included the chemical concentrations that people might be exposed to and the potential frequencies and durations of exposure during certain activities.

To determine potential risks from exposure to soil, the human health risk assessments assumed that people would not live at any of these sites. At Site 3, it was assumed that industrial office workers may work there, and that children might play in Agua Chinon Wash. At Site 5, a more conservative approach was applied, and it was assumed that children might play in the soil covering the landfill materials. Children were assumed to be exposed to chemicals in soil through ingestion (eating) of soil, inhalation of vapors or dust (breathing), and direct skin contact (touching).

To determine potential risks from exposure to groundwater, the human health risk assessments assumed that a house would be built directly adjacent to or downgradient from each site and a well would be used as the source of water for domestic use (drinking, bathing). This hypothetical assumption is very conser-

vative because it is highly unlikely that any future residential units would be built this close to the landfill as a result of regulatory limitations.

The exposure assessment for ecological risk assessment typically requires the expertise of a skilled wildlife biologist. Through site visits and literature research, the biologist develops a habitat description for the site and determines a comprehensive list of those organisms that are present or may be potentially present. As mentioned earlier, Site 3 is covered with gravel and does not support a wildlife habitat, so the ecological risk assessment process continued beyond this point for Site 5 only. At Site 5, the biologist then identified the potential exposure pathways and determined which of these may be complete such that exposure to site chemicals could occur. Potential routes of exposure included ingestion of soil, ingestion of plant and animal tissue exposed to chemicals in the soil, and direct contact with the soil.

Assess Toxicity

In Step 3, using criteria established by U.S. EPA and California EPA, the Navy assessed the toxicity of site chemicals identified in Step 1. The objective of this step is to determine the relationship between dose and toxic response for each chemical and assign toxicity values for inclusion into the risk assessments. Human health toxicity values for cancer-causing chemicals are known as cancer slope factors; values for chemicals that can cause other health effects are termed reference doses. Ecological toxicity values are concentrations, or doses, of chemicals that cause no observable negative effects to wildlife, and are termed toxicity reference values. The various toxicity values and the concentrations of site chemicals are then inserted into calculations to determine human health and ecological risks.

Characterize Site Risks

In Step 4, results of the human health and ecological risk calculations are combined, evaluated,

and summarized. The Navy and regulatory agencies use this information to determine whether site risks are great enough to cause health problems for people (Sites 3 and 5) or affect plants and animals (Site 5). Risk managers take into account that calculated risk levels are an indication of potential risks and, by design, are conservative in nature to provide a margin of safety for decision making.

Risk Assessment Results

Results from the risk assessments indicate potential risks to human health and the environment would continue to be present if actions are not taken at Sites 3 and 5 landfills to prevent exposure to wastes or to control infiltration.

Soil—At Sites 3 and 5, the probability of a child developing cancer from exposure to soil while playing is less than 1×10^{-6} . Noncancer risks from exposure to soil are less than a total hazard index of 1.

Groundwater—The additional chance of a resident developing cancer from exposure to groundwater is between 10^{-4} and 10^{-6} at both sites. The risk assessments also concluded that exposure to groundwater would result in non-cancer risks greater than 1. Risk assessment results show that the chemicals present in groundwater at Sites 3 and 5 do not present a current risk to human health because the impacted water is not used for domestic purposes. Further analysis of the groundwater at these sites indicated that the chemicals present in the groundwater were naturally occurring and not resulting from the landfills; therefore, no response action for groundwater cleanup is necessary.

Ecological—The ecological risk assessment performed at Site 5 and at the reference site both resulted in a total hazard index greater than 1. The risk assessments support the conclusion that significant ecological effects are not expected.

Table 1: Risk Ranges to Protect Human Health

Health Risks	Unacceptable Risks	Risk Management Range/ Generally Acceptable Risks	Acceptable Risks
Cancer	More than 1 additional cancer case in a population of 10,000 (greater than 10^{-4})	1 additional cancer case in a population of 10,000 to 1 additional cancer case in a population of 1,000,000 (10^{-4} through 10^{-8})	Less than 1 additional cancer case in a population of 1,000,000 (less than or equal to 10^{-8})
Noncancer	A hazard index greater than 1 should be evaluated further.	A hazard index of 1	A hazard index less than 1

Summary of Landfill Closure Alternatives

The Feasibility Study Addendum effort focused on the following three key steps: revise the remedial action objectives for Sites 3 and 5; revise the remedial alternatives first presented in the original FS Report; and conduct a reevaluation and comparative analysis of the revised alternatives. The remedial action objectives identified in the original FS Report were reevaluated based on the review of supplemental site characterization results and the proposed additional engineering and institutional controls. The original FS evaluation proposed that monitoring of leachate and landfill gas be a determining factor in installing leachate and landfill gas controls if deemed necessary in the future. Based on agreements between the California Integrated Waste Management Board (CIWMB), one of the state agencies responsible for overseeing landfills, and the FFA signatories, the remedial alternatives as presented in the FS Addendum now directly address the underlying concern of potential landfill gas migration at Sites 3 and 5. An evaluation of metals in groundwater at the landfills concluded that elevated concentrations of metals in groundwater resulted from natural conditions and were not associated with waste disposal activities conducted at Sites 3 and 5. Therefore, no response action for groundwater is required.

To address potential landfill gas migration, all alternatives (including the preferred remedy) except for Alternative 1, contain four key components.

1. An active landfill gas collection system and passive vent system would be installed as a part of the remedy. While inactive, wells/pipes screened within the waste would be used to monitor landfill gas within the waste itself, providing an early warning feature. The system would remain inactive or vent passively unless a contingency action is triggered based on results of landfill gas monitoring.

2. As an additional feature, passive gas control trenches installed within the compliance monitoring zone and filled with gravel would be installed as a part of the remedy.

3. CIWMB monitoring protocol would be implemented with compliance landfill gas monitoring probes within 50 feet of the waste boundary. The perimeter would be monitored to demonstrate that landfill gas is not migrating beyond the landfill boundary. Once adequate data are collected, and with CIWMB concurrence, monitoring would be discontinued and land-use restrictions would be removed.

4. Land-use restrictions would be implemented within 100 feet of the waste boundary. This includes the 50-foot compliance monitoring zone plus another 50 feet as an additional buffer. Within this 100-foot land-use restriction buffer zone, construction of structures would require concurrence of the FFA signatories and the CIWMB.

continued on page 10

Table 2: Former MCAS El Toro Remedial Alternatives Cost Estimate Comparison (for comparison purposes only)

Remedial Alternatives Evaluated	Estimated Cost in \$ Millions	
	Site 3	Site 5
Alternative 1—No Action	0	0
Alternative 2—Institutional Controls and Monitoring	3.8	3
Alternative 3—Single-Layer Soil Cap with Institutional Controls and Monitoring	8.5	5.9
Alternative 4—Single-Barrier Cap with Institutional Controls and Monitoring		
Option a—clay barrier	9.6	6.2
Option b—soil/bentonite barrier	9.7	6.4
Option c—geocomposite clay liner	9	6.1
Option d—synthetic flexible membrane liner—Preferred Alternative	9.6	6.5
Alternative 5—Pavement Cap with Institutional Controls and Monitoring		
Option a—concrete cap	9.1	6.3
Option b—asphalt cap	9.8	6.5
Alternative 6—Pavement Cap with a Flexible Membrane Liner Barrier with Institutional Controls and Monitoring		
Option a—concrete cap	9.6	6.5
Option b—asphalt cap	10.4	6.8

Institutional Controls – Sites 3 and 5 Landfills

Institutional controls described in this Proposed Plan include land use restrictions that would be established to reduce or limit exposure to on-site contamination at the landfills and to protect the remedy and associated equipment. Institutional controls are applicable to all alternatives evaluated (except Alternative 1, No Action) and will be implemented as soon as feasible.

Interim Land Use Restrictions.

The property is now subject to the following Interim Land Use restrictions set forth in the Lease in Furtherance of Conveyance (LIFOC) between the United States of America and Heritage Fields LLC, A Delaware Limited Liability Company For MCAS El Toro Parcel 2, 12 July 2005, paragraphs 13.15 - 13.19, and 13.21. The Interim Land Use Restrictions set forth in the LIFOC prohibit:

- » Subsurface excavation, digging, drilling, or other disturbance of the ground surface without prior Government approval.
- » Installation of new groundwater wells of any type and use of contaminated groundwater without prior written Government approval.
- » Installation of any well that has the potential to affect plume migration.
- » Alteration, disturbance or removal of groundwater monitoring wells, remedial action equipment (e.g. pumps), or associated utilities without prior written Government approval.
- » Removal of or damage to security features (e.g., locks on monitoring wells), survey monuments, signs, or monitoring equipment and associated pipelines and appurtenances without prior written Government approval.
- » Residential use of the sites and construction of day care centers.
- » Construction of any structure, including placement of trailers without the prior written approval of the Navy and FFA signatories.

Proposed Land Use Restrictions

The Proposed Land Use Restrictions set forth below will be incorporated into and implemented through two separate legal instruments when title to the property within OU-2C (Sites 3 and 5) is conveyed:

- » Restrictive covenants included in a "Covenant to Restrict Use of Property" entered into by the Navy and DTSC as provided in the Navy/DTSC 2000 Memorandum of Agreement and consistent with the substantive provisions of tit. 22 Cal. Code Regs. Section 67391.1, and
- » One or more Quitclaim Deeds from the Navy to the property recipient.

Restricted Land Uses

The following restricted land uses for property within OU-2C must be reviewed and approved in writing in advance by the FFA Signatories and CIWMB, and California Dept. of Health and Safety (DHS) Radiological Branch (at the discretion of DTSC) in accordance with the "Covenant(s) to Restrict Use of the Property" and Quitclaim Deed(s) prior to use of the property for any of the restricted uses:

- » A residence, including any mobile home or factory built housing, constructed or installed for use as residential human habitation,
- » A hospital for humans,
- » A school for persons under 21 years of age,
- » A day care facility for children, or
- » Any permanently occupied human habitation other than including those used for commercial or industrial purposes.

Restricted Activities

The following restricted activities are prohibited throughout OU-2C unless they are reviewed and approved in writing in advance by the FFA Signatories, CIWMB, and DHS Radiological Branch (at the discretion of DTSC) in accordance with the "Covenant(s) to Restrict Use of the Property" and Quitclaim Deed(s):

- » Land disturbing activity that involves movement of soil to the surface from below the surface of the land, including but not limited to excavation of soil and construction of roads, utilities, facilities, structures, and appurtenances of any kind.
- » Alteration, disturbance, or removal of any component of a response or cleanup action including but not limited to land-fill cap; leachate collection systems; groundwater extraction, injection, and monitoring wells and associated piping and equipment; or associated utilities.
- » Extraction of groundwater and installation of new groundwater wells.
- » Removal of or damage to security features (for example, locks on monitoring wells, fencing, and signs).
- » Construction of structures within 100 feet of the edge of the landfills.

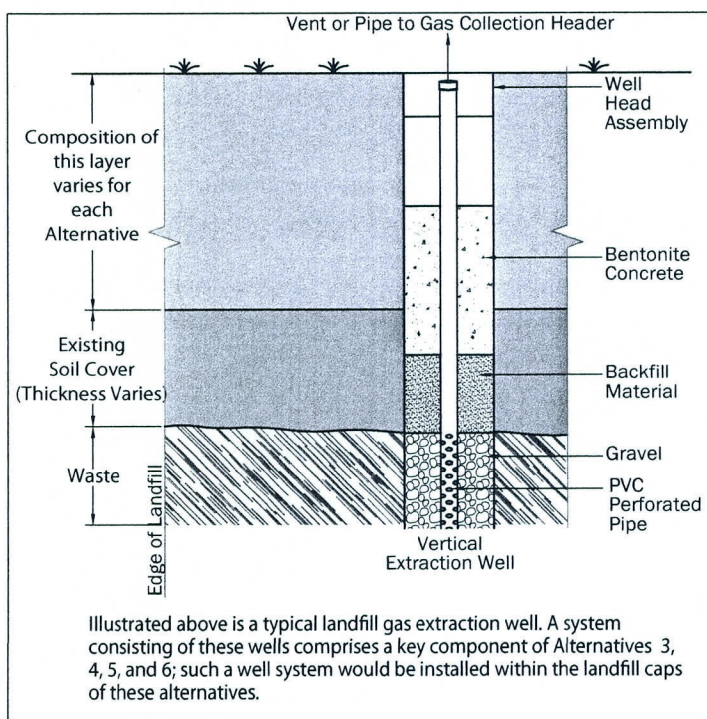
Access provisions are required to ensure the Navy and regulatory agencies have access to remedial equipment and other remedy components for the purpose of implementing the remedial action, performing maintenance activities, and conducting monitoring.

Due to the new remedial action objectives for Sites 3 and 5, active and passive landfill gas controls for direct control of landfill gas are included. The remedial action objectives for Sites 3 and 5 presented in the FS Addendum are prescribed to:

- minimize direct contact with the landfill wastes;
- control surface water run-on and run-off and erosion, minimize infiltration of water and potential contaminant leachate to groundwater;
- minimize the potential for landfill gas to migrate to and beyond the 100-foot buffer zone established for Sites 3 and 5 at concentrations greater than *California Code of Regulations* Title 27 thresholds; and
- minimize the potential for surface waters in the washes from coming in contact with the landfill (Applicable to Site 3 only).

Descriptions of the alternatives evaluated for Sites 3 and 5 are presented below and are numbered as they appear in the FS Addendum Report. The conceptual alternatives presented in the FS Addendum Report were developed to facilitate the comparative evaluation process. The design specifications for the preferred remedy, upon selection, will be defined in the Remedial Design documents and the Remedial Action Work Plan. Conceptual figures that illustrate the landfill caps accompany the alternative descriptions.

Landfill Gas Collection Well



Key supporting information also includes the following:

- cost comparison of remedial alternatives (Table 2, page 8);
- evaluation of the alternatives (page 13);
- institutional controls pertaining to landfill closure (page 9); and
- proposed federal and state applicable or relevant appropriate requirements (ARARs) for landfill closure (page 16).

The preferred alternative for Sites 3 and 5 is Alternative 4d, the Single-Barrier Cap with Institutional Controls and Monitoring. The cap would be a modified Title 27 prescriptive (clay) cap with a synthetic flexible membrane liner (FML) and a vegetative soil cover. Since metals in groundwater resulted from natural conditions and were not associated with waste disposal activities conducted at Sites 3 and 5, no response action for groundwater is required.

Alternative 1—No Action

By law, the No Action alternative is evaluated to provide a basis from which to develop and evaluate other remedial alternatives. Under the No Action alternative, the Navy would not implement any cleanup actions, and there would be no change to the existing site conditions.

Alternative 2—Institutional Controls (Access and Land-Use Restrictions) and Monitoring

For Alternative 2, access and land-use restrictions would be placed on the property to prohibit specific reuses of the property to protect human health and the performance of the remedy (see text box on page 9 for description of institutional controls).

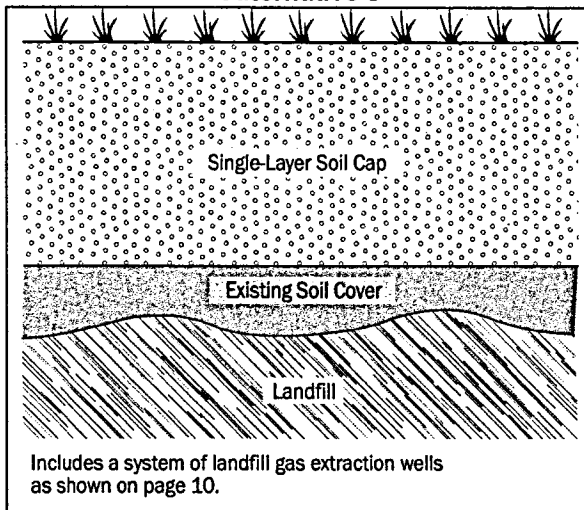
Alternative 2 includes passive gas control trenches and landfill gas monitoring wells that would be installed within the compliance monitoring zone along with vertical landfill gas extraction wells within the waste placement boundary. These vertical wells contain valves to allow either a piping manifold for active extraction or passive venting to the atmosphere. (This landfill gas control and monitoring system, both active and passive components, also applies to Alternatives 3, 4, 5, and 6.)

Environmental monitoring for landfill gas, leachate, and groundwater to assess changes in concentrations or locations of contaminants at the sites would be conducted for up to 30 years. The effectiveness of the remedy would be monitored by visual inspections. Maintenance would be conducted to assure continued integrity of the remedy.

Alternative 3—Single-Layer Soil Cap/Native-Soil Cap with Institutional Controls and Monitoring

Alternative 3 includes construction of a 4-foot single-layer soil cap to contain waste, prevent exposure to landfill materials, and reduce the amount of rainfall that can

Alternative 3



infiltrate into and through the landfill. The single-layer cover would satisfy the functions and objectives that a *California Code of Regulations* Title 27 prescriptive (clay) cap is intended to serve, specifically minimizing water infiltration and leachate migration. Test results showed that the single-layer soil cap is as effective at reducing infiltration as the clay cap. It is expected to achieve an equivalent standard of performance for protecting groundwater.

Computer modeling was performed to evaluate the effectiveness of the single-layer soil cap, and it was determined it would be an acceptable engineered alternative to the Title 27 prescriptive cap.

The cap would be graded and built with surface water drainage controls to enhance its effectiveness. Soil in the cap would be compacted to reduce the amount of water that could pass through the cap, thereby reducing the chance for leachate to form and potentially affect groundwater. The surface of the cap would be revegetated to prevent erosion.

Under Alternative 3, landfill capping at Site 3 would include excavation and removal of wastes from the former incinerator area and Waste Areas B through F (see map on page 3). Excavated wastes would be consolidated in the main landfill area and covered with the single-layer cap. At Site 5, consolidation of wastes in this manner is not necessary since all wastes are confined to one area. (Consolidation of wastes as described here also applies to Alternatives 4, 5, and 6.)

Institutional controls that would be implemented under Alternative 3 will include site access and land-use restrictions as described under Alternative 2 (see text box on page 9 for description of institutional controls). Alternative 3 includes the identical landfill gas monitoring and control system described under Alternative 2. Environmental monitoring of landfill gas, leachate, and groundwater would be the same as for Alternative 2. The effectiveness of surface water (run-on and run-off) controls, revegetation of the covers, and site security would also be monitored by visual

inspections. Maintenance would be conducted to assure continued integrity of the landfill cap and its components.

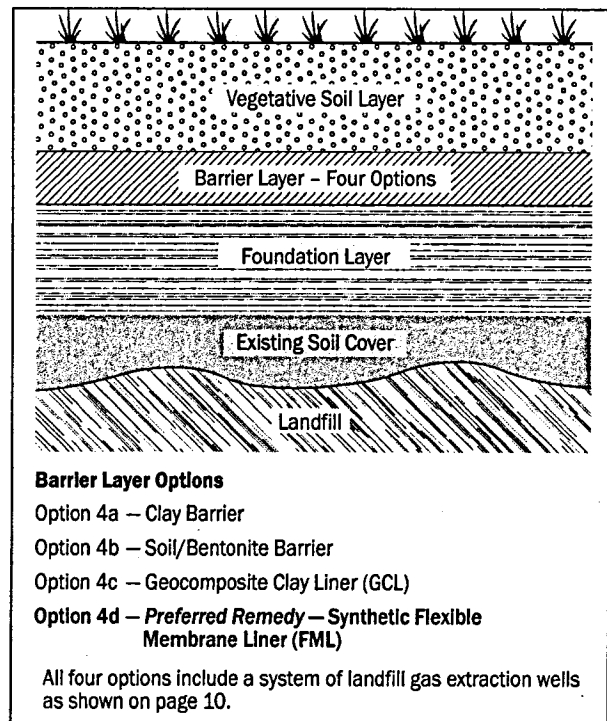
Alternative 4—Single-Barrier Cap with Institutional Controls and Monitoring (four options developed)— Preferred Remedy for Sites 3 and 5—Alternative 4d

Alternative 4 consists of a single-barrier cap that would minimize water infiltration and leachate migration. This cap would consist of a soil foundation layer, a Title 27 prescriptive cap with a barrier layer (four separate options) made of either clay, soil/bentonite mix, geocomposite clay liner, or a synthetic flexible membrane (plastic) liner (FML), and topped off with a top soil layer to support vegetation. The surface of the cap would be revegetated to prevent erosion.

Prior to installation of the cap, wastes would be consolidated at Site 3 in the same manner described in Alternative 3. Consolidation of wastes is not necessary at Site 5. Alternative 4 includes the identical landfill gas monitoring and control system described under Alternative 3. Institutional controls that would be implemented under Alternative 4 will include site access and land-use restrictions as described under Alternative 3 (see text box on page 9 for description of institutional controls). Environmental monitoring of landfill gas, leachate, and groundwater, and conducting of visual inspections to monitor the effectiveness of the cap and other components of the remedy would be the same as for Alternative 3.

Alternatives 4a, 4b, 4c, and 4d (the preferred remedy) are the same except for the barrier (middle) layer of the cap. In all four options, the foundation layer consists of existing cover material. It would be compacted to provide

Alternative 4



adequate structure for the overlying layers. The top layer would be a layer of top soil placed on top of the barrier layer to protect the barrier layer and provide a medium for vegetation. Barrier layer options are summarized below.

- Alternative 4a barrier layer—would consist of compacted clay that would act as a barrier to infiltration.
- Alternative 4b barrier layer—would be composed of a soil/bentonite clay mixture that would use an off-site borrow source of fine-grained soil and bentonite clay imported from a commercial supplier. These materials would be mixed according to the specifications in the Remedial Design documents.
- Alternative 4c barrier layer—would consist of a geo-composite clay layer that is a manufactured hydraulic barrier of sodium-bentonite clay sandwiched between two layers of geotextile material that are held together by stitching or adhesives.

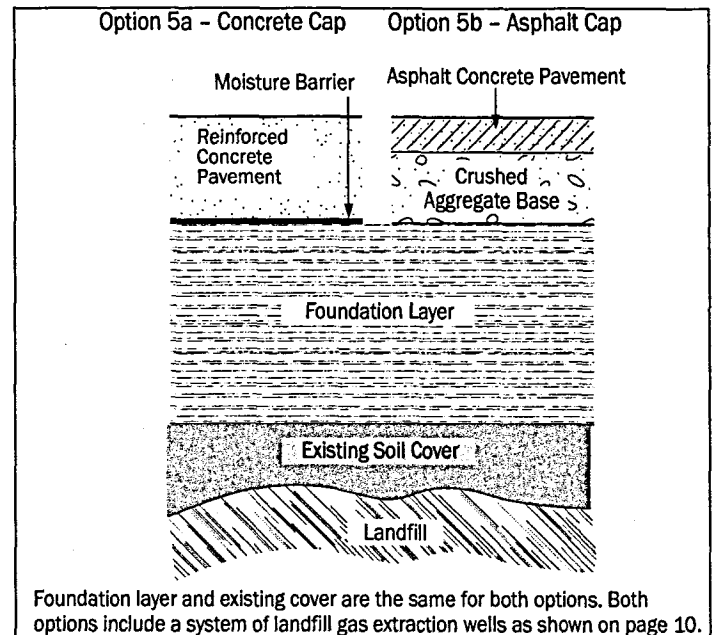
- **Alternative 4d barrier layer—preferred remedy—**would use a FML made of either high- or low-density polyethylene plastic sheeting instead of the clay layers, avoiding the potential for clay layers to dry out.

Institutional controls for all Alternative 4 options will include site access and land-use restrictions as described under Alternative 2 (see text box on page 9 for description of institutional controls). All Alternative 4 options include the identical landfill gas monitoring and control system described under Alternative 2. Environmental monitoring of landfill gas, leachate, and groundwater would be the same as for Alternative 2. Visual inspections and maintenance to assure the continued integrity of the landfill cap and its components would be the same as for Alternative 3. Since metals in groundwater resulted from natural conditions and were not associated with waste disposal activities conducted at Sites 3 and 5, no response action for groundwater is required.

Alternative 5—Pavement Cap with Institutional Controls and Monitoring (two options developed)

Alternative 5 would use a landfill cap that consists of a soil foundation layer covered with a reinforced concrete (Option 5a) or asphalt pavement (Option 5b) cap. For the foundation layer, on-station soil would be excavated and compacted on the landfill in layers. The concrete or asphalt pavement cap would be constructed with surface water drainage controls to direct run-on and run-off and to prevent erosion. This type of cap is effective in reducing infiltration of water into the landfills and prevents plants and animals from rooting or burrowing into the landfill. A thin layer of pliable plastic sheeting would be used as a moisture barrier. Alternative 5b would have a layer of crushed aggregate on top of the foundation layer. Asphalt

Alternative 5



pavement would be placed on top of the aggregate.

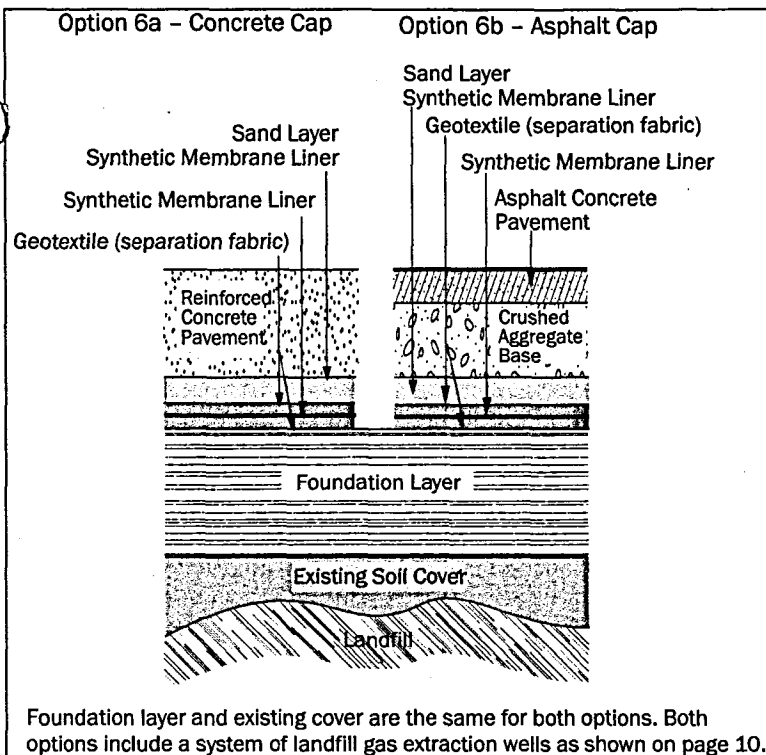
Both options under Alternative 5 would use the same process for consolidation of wastes for Site 3 as described for Alternative 3. Consolidation of wastes does not apply to Site 5.

Institutional controls for both Alternative 5 options will include site access and land-use restrictions as described under Alternative 2 (see text box on page 9 for description of institutional controls). Both Alternative 5 options include the identical landfill gas monitoring and control system described under Alternative 2. Environmental monitoring of landfill gas, leachate, and groundwater would be the same as for Alternative 2. Visual inspections and maintenance to assure the continued integrity of the landfill cap and its components would be the same as for Alternative 3. Both of these cap options would require maintenance and repair to prevent leaking if cracks form in the pavement.

Alternative 6—Pavement Cap with a Flexible Membrane Liner Barrier with Institutional Controls and Monitoring (two options developed)

Alternative 6 would use either a reinforced concrete (Option 6a) or an asphalt pavement cap (Option 6b) landfill cap constructed in the same manner as the Alternative 5 options. The soil foundation layer would be constructed in the same manner as Alternative 5. Alternatives 6a and 6b contain additional features to prevent infiltration of moisture into the landfill contents. Above the foundation layer, a synthetic plastic FML would be installed with a geotextile separation fabric above and below FML in both options. A sand layer that would function as a drainage layer would be installed on top of the FML layer. The sand layer would also contain a subsurface drainage, collection, and removal system. In both options, these combined layers would act as a barrier to further prevent surface water

Alternative 6



from penetrating and infiltrating into the landfills, since concrete and asphalt can develop cracks over time from shrinkage and settlement. Both options under Alternative 6 would use the same process for consolidation of wastes for Site 3 as described for Alternative 3. Consolidation of wastes does not apply to Site 5.

Institutional controls for both Alternative 6 options will include site access and land-use restrictions as described under Alternative 2 (see text box on page 9 for description of institutional controls). Both Alternative 6 options include the identical landfill gas monitoring and control system described under Alternative 2. Environmental monitoring of landfill gas, leachate, and groundwater would be the same as for Alternative 2. Visual inspections and maintenance to assure the continued integrity of the landfill cap and its components would be the same as for Alternative 3. Both of these cap options would require maintenance and repair to prevent leaking if cracks form in the concrete or pavement.

Evaluation of Landfill Remedial Alternatives—Sites 3 and 5

Each alternative has undergone a detailed evaluation and analysis, using the nine remedy selection criteria set forth in the NCP. These criteria are categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. The threshold criteria must be satisfied in order for an alternative to be eligible for selection. The primary balancing criteria are used to weigh major tradeoffs among alternatives. Generally, the modifying criteria are taken into account after public comment is received on the Proposed Plan and reviewed with the various state regulatory agencies to determine if the preferred alternative remains the most appropriate remedial action. The nine criteria are defined below and are accompanied by the key points from the evaluation of the six remedial alternatives, with an emphasis on the preferred alternative: Alternative 4d, Single-Barrier (FML) Cap with Institutional Controls and Monitoring. A chart that summarizes evaluation of all the alternatives is shown on page 14. A conceptual design of Alternative 4d follows on page 15.

A. Threshold Criteria

1. Overall Protection of Human Health and the Environment—assesses whether a remedial alternative provides adequate human health protection and describes how health risks posed by the site will be eliminated, reduced, or controlled through treatment, engineering controls, or institutional and regulatory controls.

Alternatives 1 and 2 are not protective of human health and the environment. Alternatives 3, 4, 5, and 6 comply with this criterion and prevent contact with the landfill mass, mitigate erosion of landfill materials, and reduce the potential for transport of contaminants from the landfills. Alternatives 2, 3, 4, 5, and 6 all incorporate the installation of landfill gas controls systems utilizing vertical wells and horizontal trenches to prevent potential landfill gases from migrating beyond the 100-foot buffer zone. The barrier layers in Alternative 4d (preferred remedy), as well as those in Alternatives 4c, 5a, 5b, 6a, and 6b allow the least infiltration and minimize or eliminate the possibility of future impacts.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)—addresses whether a remedial alternative will meet all federal, state, and local environmental statutes or requirements.

All the alternatives, except for Alternatives 1 and 2, comply with all ARARs for closure and post closure of landfills.

B. Primary Balancing Criteria

3. Long-Term Effectiveness and Permanence—refers to the ability of a remedial alternative to continue protecting human health and the environment over time after the cleanup action is completed.

All of the alternatives leave waste in place at each site. At Site 3, Alternatives 3, 4, 5, and 6 consolidate wastes into one area under the landfill cap. Consolidation is not necessary at Site 5 because all wastes are in the same area. Alternatives 1 and 2 do not take any measures to provide for long-term permanence and effectiveness since they do not eliminate erosion or reduce migration of contaminants to groundwater. Landfill capping (Alternatives 3, 4,

5, and 6) reduces rainfall infiltration by at least 89 percent; Alternatives 4c, 4d (preferred remedy), 5a, 5b, 6a, and 6b provide the greatest reduction in infiltration and, therefore, the highest degree of long-term effectiveness. Alternatives 4c, 4d (preferred remedy), 6a, and 6b have an advantage over the other alternatives with liners, since these barriers are not subject to drying out. Alternatives 4a and 4b, with thicker barrier layers, are more resistant to puncture by root systems or burrowing animals. The pavement covers of Alternatives 5a, 5b, 6a, and 6b are more durable but may require more maintenance due to settlement and cracking. Alternatives 3, 4a, 4b, 4c, and 4d (preferred remedy) have an advantage over the other alternatives when site reuse is considered. Reuse for Sites 3 and 5 is designated as riparian corridor and golf course, respectively.

4. Reduction of Toxicity, Mobility, or Volume—refers to the degree to which a remedial alternative uses treatment technologies to reduce: 1) harmful effects to human health and the environment (toxicity), 2) the contaminant's ability to move (mobility), and 3) the amount of contamination (volume).

None of the proposed alternatives attempt to reduce the volume or toxicity of the landfill mass. Alternatives 1 and 2 do not minimize the potential for the production and migration of leachate from the landfills. The landfill capping and drainage features of Alternatives 3, 4, 5, and 6 would reduce infiltration into the landfill, minimizing the production and mobility of leachate to groundwater.

5. Short-Term Effectiveness—assesses how well human health and the environment will be protected from impacts due to construction and implementation of a remedy.

Alternative 1 does not have any short-term impacts on health and safety because this alternative involves no action. Alternative 2 has a minimal impact during groundwater, leachate, and landfill gas monitoring. Alternatives 3, 4, 5, and 6 involve short-term impacts to health and safety as a result of dust emissions from the consolidation of wastes and construction of the landfill cap. Alternatives 4a and 4b present the most risk to the community

continued on page 16

Table 3: Comparative Analysis of Alternatives—Sites 3 and 5

Preferred
Remedy

U.S. EPA Criteria		1	2	3	4a	4b	4c	4d	5a	5b	6a	6b
1 Overall Protection of Human Health and the Environment	Site 3	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Site 5	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2 Compliance with Applicable or Relevant and Appropriate Requirements	Site 3	N/A	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Site 5	N/A	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3 Long-Term Effectiveness and Permanence	Site 3	○	○	●	●	●	●	●	●	●	●	●
	Site 5	○	○	●	●	●	●	●	●	●	●	●
4 Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment	Site 3	○	○	●	●	●	●	●	●	●	●	●
	Site 5	○	○	●	●	●	●	●	●	●	●	●
5 Short-Term Effectiveness	Site 3	●	●	●	○	○	●	●	●	●	●	●
	Site 5	●	●	●	●	○	●	●	●	●	●	●
6 Implementability	Site 3	●	●	●	○	○	●	●	●	●	●	●
	Site 5	●	●	●	○	○	●	●	●	●	●	●
7 Cost	Site 3	●	●	●	○	○	○	○	○	○	○	○
	Site 5	●	●	●	○	○	○	○	○	○	○	○
8 State Acceptance	Site 3 Site 5	None of the state of California environmental agencies support either Alternative 1 or 2. State agencies concur with the Navy's preferred remedy.										
9 Community Acceptance	Site 3 Site 5	Evaluation follows the public comment period and is addressed in the Record of Decision										

Yes—meets criteria
N/A—not applicable

No—does not meet criteria

Relative Performance in Satisfying Criteria

○ Low
○ Low Moderate
● Moderate
● Moderate High
● High

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

CONCEPTUAL DESIGN OF ALTERNATIVE 4D –
PREFERRED REMEDY

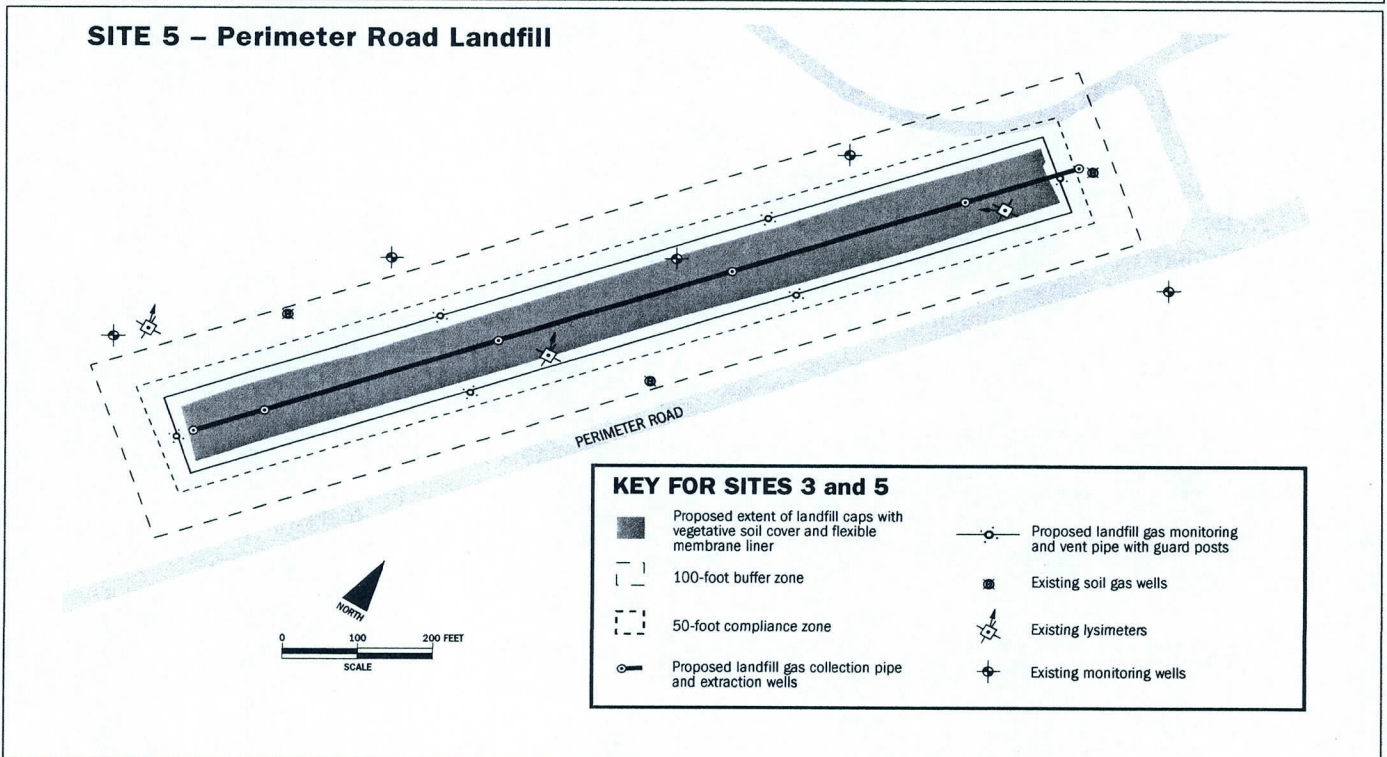
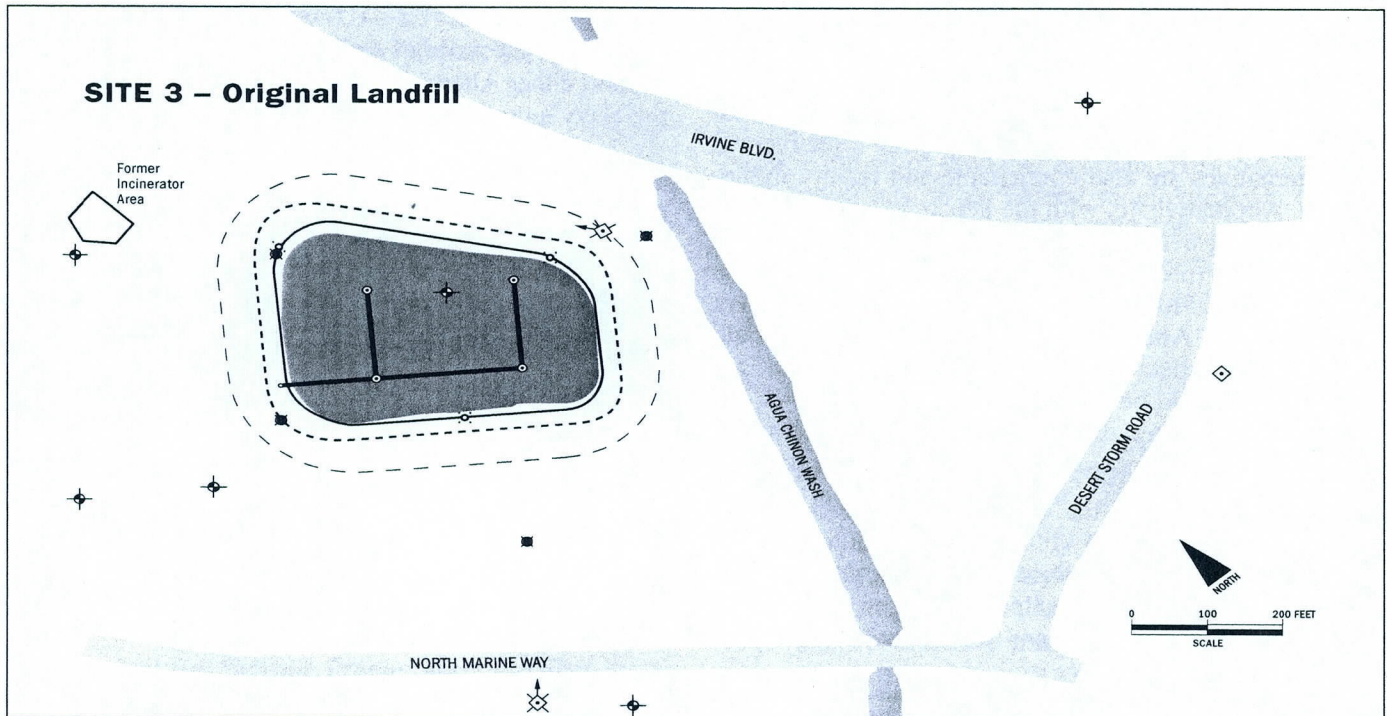
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Conceptual Design of Alternative 4d—Preferred Remedy

These diagrams illustrate the conceptual makeup of the preferred remedial alternative for landfill closure at Sites 3 and 5. Shown are the estimated boundaries of the landfill caps, along with other components of the preferred remedy. At Site 3, landfill wastes from defined waste areas (shown on the map on page 3) would be consolidated under the landfill cap. Consolidation of wastes in this manner would not be necessary at Site 5. Other components of the preferred remedy shown are the 100-foot buffer zone (comprised of a 50-foot compliance zone and an additional 50-foot buffer), landfill gas monitoring and control systems, and existing soil gas wells, lysimeters, and groundwater monitoring wells, which would be used to monitor environmental conditions at the sites. The preferred remedy would also include institutional controls, monitoring, and maintenance to ensure the integrity of the landfill caps and associated components of the remedy.



because they require numerous truck trips and more heavy equipment on-site for the delivery and placement of the soil barrier layers. Alternatives 3 and 5a require the shortest amount of time to complete.

6. Implementability—refers to the technical feasibility (ease of construction and operation) and administrative feasibility (level of agency coordination) of a remedy. Factors such as availability of materials and services needed are considered.

Alternative 1 is the easiest to implement since no action would be taken. Alternative 2 would only involve institutional controls and monitoring, so it is readily implementable. Alternative 2 would only involve institutional controls, passive and active landfill gas collection systems, and monitoring, so it is readily implementable. Institutional controls, monitoring systems, and monitoring effectiveness of the alternatives are also comparable and readily implementable. Alternative 4c, with the geocomposite liner barrier, would be easier to install than the FML liner used in Alternatives 4d (preferred remedy), 6a, and 6b because installation of the FML liner requires specialized equipment and trained labor. Alternative 4d (preferred remedy) would be easier to install than Alternatives 4a and 4b. Alternatives 3, 4, 5, and 6 would be more complicated because of the waste consolidation activities at Site 3. Overall, Alternative 3 would be the easiest of the landfill capping alternatives to implement because it does not involve importing off-station soil.

7. Cost—evaluates the estimated capital costs and present worth in today's dollars required for design and construction and long-term operation and maintenance costs of a remedy.

No cost is associated with Alternative 1 (No Action), while Alternative 2 would be the least costly of the other alternatives. Alternatives 6b and 4b would be the most costly of all the alternatives. Site 3 estimated costs range from \$3.8 million to \$10.4 million. Site 5 estimated costs range from \$3.0 million to \$6.8 million. A cost comparison of all alternatives is presented on page 8.

C. Modifying Criteria

8. State Acceptance—reflects whether the state of California's environmental agencies agree with, oppose, or have no objection to or comment on the Navy's preferred alternative.

None of the state of California environmental agencies support either Alternative 1 or 2. State agencies concur with the Navy's preferred remedy.

9. Community Acceptance—evaluates whether community concerns are addressed by the remedy and if the community has an apparent preference for a remedy. Although public comment is an important part of the final decision, the Navy is compelled by law to balance community concerns with the other criteria.

This Proposed Plan is the Navy's invitation to the community to comment on the proposed alternatives that were revised and reevaluated for Sites 3 and 5. Community acceptance will be determined after the conclusion of the public comment period and will be documented in the Responsiveness Summary section of the Record of Decision.

Applicable or Relevant and Appropriate Requirements for Proposed Closure of Sites 3 and 5 Landfills

The federal Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires that remedial alternatives meet federal or state (if more stringent) environmental standards, requirements, criteria, or limitations that are determined to be legal applicable or relevant and appropriate requirements (ARARs).

Significant potential ARARs that will be met by the preferred remedy for cleanup of groundwater are listed below. For more specific information on potential ARARs it is contained in the Final Feasibility Study Addendum (see text box on page 19).

Potential ARARs for Alternative 4d, the preferred remedy, for landfill closure at Sites 3 and 5 at former MCAS El Toro are listed to the right.

Potential Federal ARARs

U.S. Environmental Protection Agency (U.S. EPA)

Pursuant to Title 22 of the *California Code of Regulations* (CCR), which is part of the federally authorized Resource Conservation and Recovery Act (RCRA) program in California and pertaining to:

- the classification of RCRA hazardous wastes in the event that wastes requiring offsite disposal are generated as a result of the response action, substantive provisions CCR Title 22 of Sections 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a), and 66261.100;
- accumulation of hazardous wastes requiring off-site disposal (if generated) in containers, substantive provisions of CCR Title 22 of Sections 66264.34, 66264.171, 66264.172, 66264.173, 66264.174, 66264.175(a) and (b), and 66264.178;

- groundwater protection standards, substantive provisions of CCR Title 22, Section 66264.94(a)(1) and (3), (c), (d), and (e) for unsaturated zone;
- generator requirements, CCR Title 22, Sections 66262.10(a), 66262.11, and 66262.13(a) and (b);
- groundwater monitoring program requirements, CCR Title 22, Sections 66264.91(a)(1)-(a)(4) and (c), except permit requirements; 66264.93; 66264.95(a) and (b); 66264.97(b)(1)(A), (b)(1)(B), (b)(4-7), (e)(6), (12)(A) and (B), (13), and (15); 66264.98(e)(1-5), (i), (j), (k)(1-3), (4)(A) and (D), (5), (7)(C) and (D), (n)(1), (2)(B), and (C); and 66264.99(b), (e)(1)-(6), (f)(3), and (g); and
- landfill closure and post-closure care requirements, CCR Title 22, Sections 66264.111(a) and (b); 66264.228(f); 66264.309(a); and 66264.310(b)(1), (b)(5), and (e)(1);
- fugitive dust emissions, South Coast Air Quality Management District (SCAQMD) Rule 403; and
- particulate emissions from equipment, SCAQMD Rules 404 and 405.

Uranium Mill Tailings Radiation Control Act

Pursuant to Title 40 of the *Code of Federal Regulations* (CFR) Section 192.02(a) and (b), substantive provisions pertaining to effectiveness of controls for residual radioactive materials and potential releases of Radon-222 have been identified as potential ARARs for landfill caps.

Archeological and Historic Preservation Act and Historic Sites, Buildings and Antiquities Act

Pursuant to Title 16 of the *United States Code* (USC) Sections 469-469c-1 and 461-467, substantive provisions of the following federal requirements in Title 40 of the CFR have been identified as potential ARARs pertaining to:

- an archaeological survey for construction on previously undisturbed land and the recovery and preservation of archaeological or historical data, if found, CFR Title 40, Section 6.301(c); and
- avoidance of undesirable impacts on landmarks, CFR Title 40, Section 6.301(a).

Archeological Resources Protection Act of 1979

Pursuant to Title 16 of USC Sections 470aa-470mm (P.L. No. 96-95), the substantive provisions pertaining to excavation, removal, damage, alteration, or defacement of archaeological resources located on public lands unless such action is conducted pursuant to a permit.

U.S. Nuclear Regulatory Commission (U.S. NRC)

Pursuant to Title 10 of the CFR, the substantive provisions pertaining to:

- license termination with unrestricted site use for former incinerator area and Waste Areas B through F of Site 3, Sections 20.1402;
- license termination with restricted use for capped portions of IRP Sites 3 and 5, Section 20.1403(a) and (b);
- temporary storage of excavated waste containing radiological constituents, Sections 20.1801 and 20.1802; and
- radiological waste disposal, Sections 61.41, 61.42, 61.44, 61.52(a)(6), and 61.52(a)(8).

U.S. Department of Transportation

Pursuant to Federal Hazardous Materials Transportation Law, Title 49 of the USC Sections 5101-5127), substantive provisions of the federal requirements in CFR Title 49, Sections 171.2 (f) and (g), 172.300-172.304, 172.312, 172.400, and 172.504 have been identified as potential ARARs pertaining to the on-site packaging, labeling, and shipment of hazardous materials.

Potential State ARARs

The State Water Resources Control Board and Regional Water Quality Control Board-Santa Ana Region

Pursuant to the State Water Resources Control Board and Regional Water Quality Control Board - Santa Ana Region, substantive provisions of the following requirements are potential ARARs pertaining to:

- closure of waste management unit, CCR Title 27, Sections 20950(a)(2)(A) and 20950 (e)
- final grading, CCR Title 27, Sections 21090(b)(1);
- placement and design of the foundation layer, CCR Title 27, Section 21090(a)(1);
- barrier layer design, CCR Title 27, Section 21090(a)(2);
- vegetation layer design, CCR Title 27, Sections 21090 (a)(3);
- postclosure settlement evaluation, CCR Title 27, Sections 21090(e)(2); and
- run-on/run-off and erosion control, CCR Title 27, Section 21090(c)(4).

California EPA Department of Toxic Substances Control

Pursuant to CCR Title 22, the substantive provisions pertaining to:

- non-RCRA hazardous waste determination for wastes requiring off-site disposal, Sections 66261.22(a)(3) and (4), 66261.24(a)(2) to (a)(8), 66261.101, 66261.3(a)(2)(C) and (a)(2)(F);
- land use covenants, Section 67391.1(a) and (e)(1);
- compaction requirements, Section 66264.228(e)(1);

- landfill cover seismic requirements, Section 66264.310(a)(5);
- prevent surface water infiltration in the closed landfill and maintain effectiveness of the final cover, Sections 66264.310 (a)(1) and (b)(1);
- elevation benchmark maintenance, Section 264.310(b)(5); and
- drainage and filter layer requirements, Sections 66264.228(e)(10) and (11).

Pursuant to California Health & Safety Code, the substantive provisions of Sections 25202.5, 25222.1, 25355.5(a)(1)(C), 25233(c), and 25234 have been identified as potential ARARs for implementing institutional controls.

Pursuant to California Civil Code, the substantive provisions of Section 1471 have been identified as potential ARARs for implementing institutional controls.

California Integrated Waste Management Board

Pursuant to the CCR, Division 2, Title 27, substantive provisions of the following portions of Title 27 as potential ARARs pertaining to:

- security at closed sites, Sections 21135(f) and (g);

- placement of the final cover, Section 21140(a) and (b);
- final grading, Section 21142;
- cover seismic requirements, Section 21145;
- erosion control, Sections 21150 and 21160(a) and (b);
- landfill gas control, Sections 20921(a)(1)(2), and (3); 20921(b); 20921(d); 20923; 20925(a), (b), and (c); 20925(d)(1) and (3); 20932; 20933; and 20937;
- postclosure maintenance, Section 21180(a) and (b); and
- postclosure land use, Sections 21190(a) and (b).

South Coast Air Quality Management District

Pursuant to the rules and regulations of the South Coast Air Quality Management District SCAQMD, substantive provisions of the following SCAQMD requirements have been determined to be potential ARARs pertaining to:

- a landfill gas control system, Rule 1150.1;
- control of visible emissions, Rule 401; and
- excavation at landfill sites are relevant and appropriate requirements, Rule 1150.

Definitions of Chemical and Technical Terms

Bank cubic yards: refers to engineering estimates of an undisturbed, in-place volume of soil. Example: A volume of soil that is 5 yards wide, 20 yards long, and 1 yard deep would be 100 bank cubic yards. Excavating or compacting soil can result in an adjustment in volume of approximately 25 percent. Therefore, 100 bank cubic yards in the ground can become 125 cubic yards in trucks hauling loose soil from an excavation area. Similarly, the 125 cubic yards of loose soil could be used to create a compacted soil layer with a fill volume of 94 cubic yards.

Feasibility Study (FS): An analysis of cleanup or remedial alternatives to evaluate their effectiveness and to enable selection of a preferred remedy.

Landfill gas (also called soil gas) consists of methane and other gases generated by the decomposition of organic matter from wastes disposed of in landfills.

Leachate is formed when surface water mixes with landfill materials and creates liquid wastes that could migrate downward and impact groundwater.

Metals found at the sites include aluminum, arsenic, beryllium, and manganese. Arsenic and beryllium are known to cause cancer. Aluminum and manganese are non-cancer-causing chemicals that can affect the nervous system, while manganese can also affect the respiratory system. Aluminum, arsenic, beryllium, and manganese occur naturally in the soils native to areas both on and off Former MCAS El Toro property.

Petroleum hydrocarbons are chemical components of fuels. The compounds (e.g., VOCs, SVOCs) that make up petroleum hydrocarbons are evaluated for potential health effects. Petroleum hydrocarbon compounds are managed outside the CERCLA program.

Radium (chemical symbol Ra) is a naturally occurring radioactive metal. Its most common isotopes are radium-226, radium-224, and radium-228. Radium is a radionuclide formed by the decay of uranium and thorium in the environment. It occurs at low levels in virtually all rock, soil, water, plants, and animals.

Radium-226 (Ra-226) is a radioactive metallic element (isotope) that was used in luminescent paints for dials, gauges, and markers. At Former MCAS El Toro, small quantities of radium-painted parts and gauges may have been stored at Site 8, the Defense Reutilization and Marketing Office Storage Yard.

Record of Decision (ROD) is the public document that explains what cleanup alternative will be used at a specific site. The ROD is based on information and technical analysis generated during the remedial investigation/feasibility study and consideration of public comments and community concerns received throughout the process and in response to the Proposed Plan.

Remedial Investigation (RI): One of the two major studies that must be completed before a decision can be made about how to clean up a Superfund site. (The FS is the second major study.) The RI is designed to determine the nature and extent of contamination and assess human health and ecological risks at the site.

Semivolatile Organic Compounds (SVOCs) comprise a general category of organic compounds that evaporate at a slower rate than VOCs. Some SVOCs are known cancer causing compounds.

Volatile Organic Compounds (VOCs) make up a general category of organic (carbon-containing) compounds that evaporate easily at room temperature. VOCs are commonly used for degreasing machinery and parts, paint stripping, and other industrial operations. At Former MCAS El Toro, historical activities include more than 40 years of aircraft maintenance using industrial solvents, like trichloroethene (TCE), that are within the VOC category. Some VOCs are known cancer causing compounds.

INTERNET CONNECTION



For more information on Former MCAS El Toro environmental restoration activities, visit the web site at:

www.bracpmo.navy.mil

For More Information

Environmental Reports Available for Review and Comment

Documents and reports that cover the remedial investigation, the radiological investigation, and the feasibility studies at Sites 3 and 5 are available for review and comment. Key reports include:

- Draft Final Phase II Remedial Investigation Report Operable Unit 2C, Site 3 (April 1997)
- Draft Final Phase II Remedial Investigation Report Operable Unit 2C, Site 5 (April 1997)
- Draft Final Phase II Feasibility Study Report, Operable Unit 2C, Site 3 (September 1997)
- Draft Final Phase II Feasibility Study Report, Operable Unit 2C, Site 5 (September 1997)
- Draft Record of Decision, Operable Unit 2C, Sites 3 and 5 (March 1999)
- Final Historical Radiological Assessment, MCAS El Toro (May 2000)
- Final Feasibility Study Addendum, Operable Unit 2C, IRP Landfill Sites 3 and 5 (December 2006)
- Final Radiological Release Report, IRP Sites 3 and 5 (Including Aerial Photograph Anomaly 46), Anomaly Area 3, and Building, 244 (December 2006)

Copies of these documents are available at the following locations:

- Heritage Park Regional Library, MCAS El Toro Information Repository, 14361 Yale Avenue, Irvine, CA 92714, (949) 551-7151.
- MCAS El Toro Administrative Record File, BRAC Office, Building 83 at Former MCAS El Toro, contact Ms. Marge Flesch, (949) 726-5398.

Project Contacts—Former MCAS El Toro

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cooper.viola@epa.gov

**Submit written comments on the Sites 3 and 5 Proposed Plan to Mr. Darren Newton, listed above, no later than February 21, 2007.*

See Inside . . .

Proposed Plan
for Closure of
Landfill Sites 3 & 5

Public Meeting

Wednesday, January 31, 2007
6:30 p.m., Irvine City Hall

MAILING LIST COUPON

If you would like to be on the mailing list to receive information about environmental restoration activities at Former MCAS El Toro, please fill out the coupon below and send it to: Mr. Bob Coleman, Brown and Caldwell, 9665 Chesapeake Drive, Suite 201, San Diego, CA 92123. If you prefer, e-mail the information requested below to rcoleman@brwncald.com

- ☐ Add me to the Former MCAS El Toro Installation Restoration Program mailing list.
- ☐ Send me information on Restoration Advisory Board membership.

Name _____ Affiliation (optional) _____
Street _____
City _____ State _____ Zip Code _____
Telephone _____

Base Realignment and Closure
Former MCAS El Toro
BRAC PMO West
Attn: Darren Newton
7040 Trabuco Road
Irvine, CA 92618-1700

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FORMER MCAS EL TORO

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PMO WEST

INSTALLATION RESTORATION PROGRAM OPERABLE UNIT 2C SITE 3, ORIGINAL LANDFILL SITE 5, PERIMETER ROAD LANDFILL FORMER MCAS EL TORO, CALIFORNIA

Proposed Plan Summary

Richard Pribyl
Remedial Project Manager
BRAC Program Management Office West

January 31, 2007



Purpose of the Proposed Plan and Public Meeting

BRAC
PMO WEST

- Present the Preferred Remedy for landfill capping at:
 - IRP SITE 3, Original Landfill
 - IRP SITE 5, Perimeter Road Landfill
- Provide opportunity for public comments
- 30-day public comment period ends on February 21, 2007



Proposed Plan Summary

BRAC
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- Site background and investigations
- Results of environmental investigations
- Current conditions of Sites 3 and 5 landfills
- Development of remedial alternatives
- Preferred remedy – Alternative 4d
- Public participation opportunities
- Next Steps

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

SITES LOCATION MAP

SITE 3 DIAGRAM AND DESCRIPTION

SITE 5 DIAGRAM AND DESCRIPTION

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, COMMAND RECORDS MANAGER, CODE EV33
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST
1220 PACIFIC HIGHWAY (NBSD BLDG. 3519)
SAN DIEGO, CA 92132

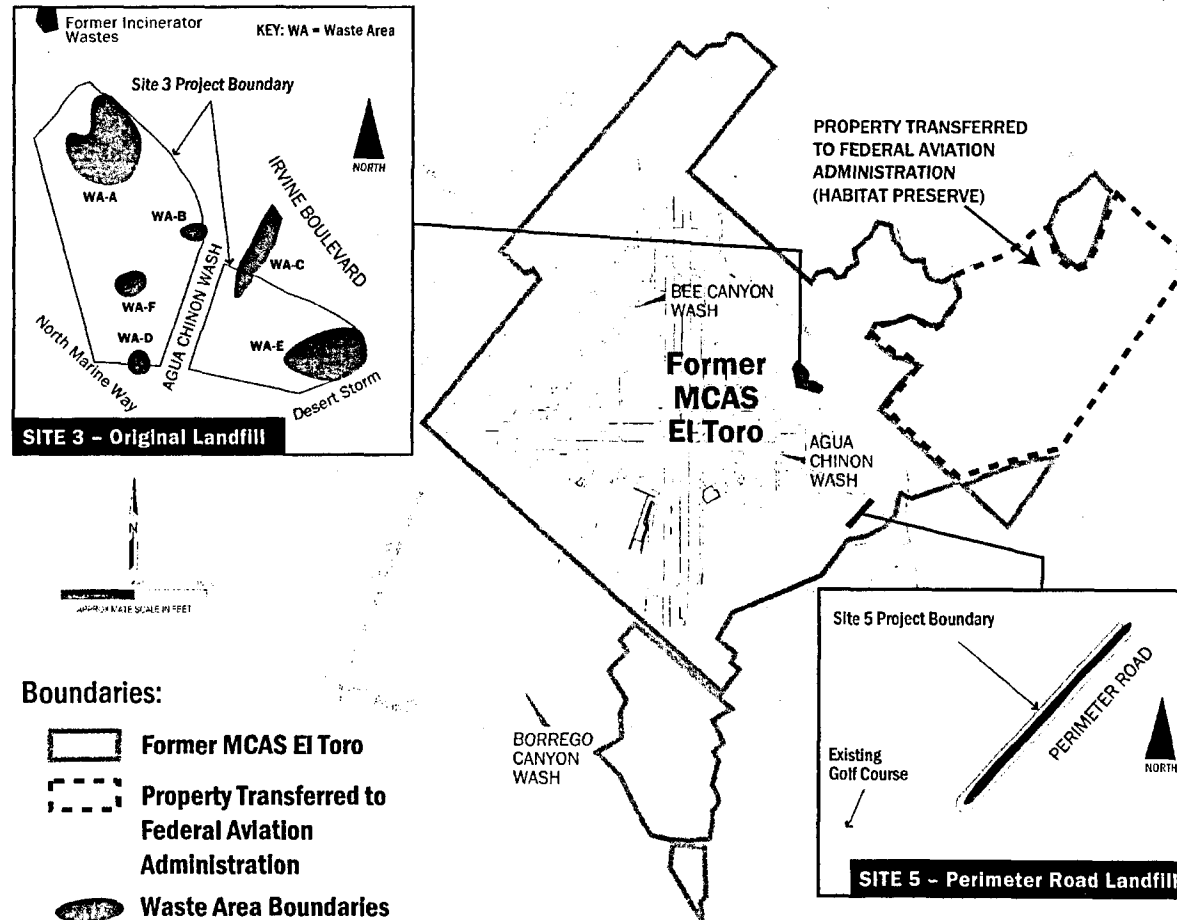
TELEPHONE: (619) 556-1280
E-MAIL: diane.silva@navy.mil

SENSITIVE



Sites Location Map

BRAC
PMO WEST



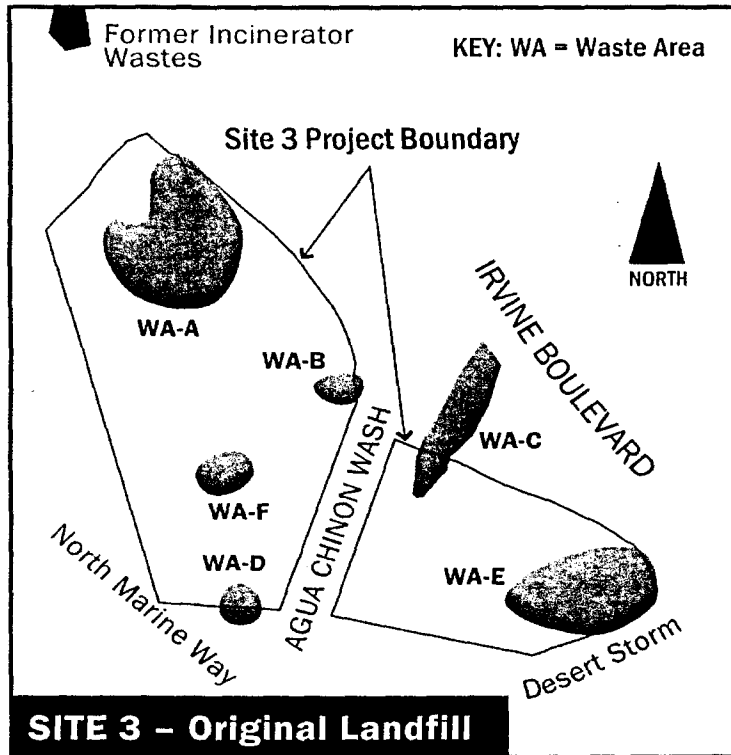
At both sites the waste areas have been revised based on information obtained from supplemental site characterization activities.

SENSITIVE



Site 3 Diagram and Description

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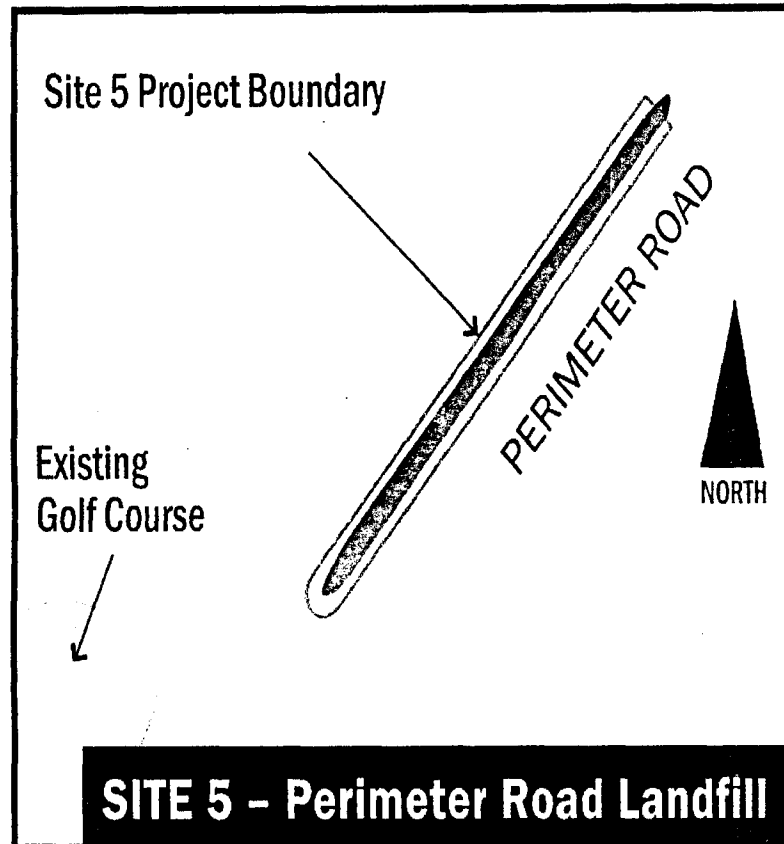


- Trench-and-fill disposal facility
- Operated from 1947 to 1955
- Approximately 11 acres
- Wastes were burned at an incinerator to reduce volume
- Metals, incinerator ash, solvents, paint residues, hydraulic fluids, engine coolants, construction debris, oily waster, municipal solid waste, and various inert solid wastes



Site 5 Diagram and Description

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- Trench-and-fill disposal facility
- Operated from 1955 until the late 1960s
- Approximately 1.8 acres
- Wastes often burned to reduce volume
- Burnable trash municipal solid waste, cleaning fluids, scrap metals, paint residues, unspecified fuels, oils, and solvents



Previous Investigations and Reports

BRAC
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Investigations Supporting the Closure Remedy

- Draft Final Remedial Investigation Report – April 1997
- Draft Final Feasibility Study Report – September 1997
- 1998 Proposed Plan – June 1998
- Draft Record of Decision – March 1999
- Final Historical Radiological Assessment - May 2000
- Final Feasibility Study Addendum – December 2006
(includes information from 2004 Supplemental Site Characterization)
- Final Radiological Release Report – December 2006
- 2007 Proposed Plan – January 2007



1997 Remedial Investigation

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- Determined nature and extent of contamination at sites.
- Human health and ecological risk assessments evaluated potential risks to human health and the environment.
- Analysis of air, soil gas, soil, and groundwater samples evaluated site conditions.
 - Air sampling: no localized concentrated sources of landfill gases.
 - Air and soil gas sampling: confirmed that land fill gas controls are not required.
 - Soil sampling: VOCs, semivolatile organic compounds (SVOCs), petroleum hydrocarbons, and metals.
 - Groundwater sampling: metals are a result of natural, ambient conditions.
 - Human Health and Ecological Risk Assessments identified potential risks to human health at Sites 3 and 5, and to the environment at Site 5.



1997 Feasibility Study

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- Remedial action objectives helped define remedial alternatives.
- U.S. EPA's presumptive remedy approach, used at landfill sites throughout the country, guided the development and evaluation of remedial alternatives.
- The remedy of landfill capping, institutional controls, and long-term monitoring framed six alternatives, some with optional components.
- The No Action alternative was used as a baseline for the other five alternatives.
- Excavation and off-site disposal was not economically feasible and was screened-out.



1998 Proposed Plan and 1999 Draft Record of Decision

BRAC
PMO WEST

- 1998 Proposed Plan
 - Presented a summary evaluation of the remedial alternatives.
 - Identified the Preferred Remedy for closure of Sites 3 and 5.
 - Requested public comments on the Proposed Plan.
 - A public meeting was held and comments were received.
- 1999 Draft Record of Decision
 - Alternative 4d, Single-Barrier Cap with Flexible Membrane Liner (FML) with Institutional Controls and Monitoring, was identified as the selected remedy for final closure of Sites 3 and 5.



Radiological Investigations

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- Radiological evaluations were conducted in 2000, 2001 and 2004.
- A historical radiological assessment (HRA) was conducted in 2000 throughout the former station to identify potential, likely, or known radioactive source material or contamination.
- HRA identified Radium-226 as a chemical of potential concern due to its use in luminescent paint used for aircraft dials, gauges, and other equipment.
- Further investigation at Sites 3 and 5 using radiological scans and soil sampling was conducted.
- Naturally occurring background radiological level was established.
- Results: Radiological levels in the soil are within background.



Feasibility Study Addendum

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- A Supplemental Site Characterization was conducted.
- Remedial action objectives were revised, modifications were made to the remedial alternatives previously developed for Sites 3 and 5.
- Characterization activities included trenching and soil gas sampling, installation and sampling of perimeter landfill gas (soil gas) monitoring wells.
 - Refined the landfill boundaries and waste quantities
 - Site 3: 30,000 bank cubic yards of waste.
 - Site 5: 18,000 bank cubic yards of waste.
 - Methane concentrations reported would not typically require landfill gas controls.
 - Groundwater does not require cleanup; only monitoring is necessary.



Feasibility Study Addendum

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Remedial Action Objectives Presented in the FS Addendum:

- Protect human health by minimizing the potential for direct contact with landfill wastes.
- Control run-off and erosion; minimize infiltration and potential contaminant leaching to groundwater.
- Minimize the potential for landfill gas to migrate to and beyond the 100-foot buffer zone established for Sites 3 and 5.
- Minimize the potential for surface waters in the wash from contacting the landfill wastes (applicable to Site 3 only).



Feasibility Study Addendum

BRAC
PMO WEST

Remedial Alternatives Evaluated

- Alternative 1 – No Action
 - *Alternative 2 – Institutional Controls and Monitoring
 - *Alternative 3 – Single-Layer Soil Cap with Institutional Controls and Monitoring
 - ***Alternative 4 – Single-Barrier Soil Cap with Institutional Controls and Monitoring** – four options
 - Option a – clay barrier
 - Option b – soil/bentonite barrier
 - Option c – geocomposite clay liner
 - **Option d – synthetic flexible membrane liner (FML) – Preferred Remedy**
 - *Alternative 5 – Pavement Cap with Institutional Controls and Monitoring
 - Option a – concrete cap
 - Option b – asphalt cap
 - *Alternative 6 - Pavement Cap with FML with Institutional Controls and Monitoring
 - Option a – concrete cap
 - Option b – asphalt cap
- * Includes four key components to address potential landfill gas migration.



Nine NCP Evaluation Criteria

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➤ **Threshold Criteria**

1. Overall Protection of Human Health and the Environment
2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

➤ **Primary Balancing Criteria**

3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility, or Volume through Treatment
5. Short-Term Effectiveness
6. Implementability
7. Cost

➤ **Modifying Criteria**

8. State Acceptance
9. Community Acceptance



Comparative Analysis of Alternatives

BRAC
PMO WEST

Table 3: Comparative Analysis of Alternatives—Sites 3 and 5

**Preferred
Remedy**

U.S. EPA Criteria		1	2	3	4a	4b	4c	4d	5a	5b	6a	6b
1 Overall Protection of Human Health and the Environment	Site 3 Site 5	No No	No No	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
2 Compliance with Applicable or Relevant and Appropriate Requirements	Site 3 Site 5	N/A N/A	No No	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes
3 Long-Term Effectiveness and Permanence	Site 3 Site 5	○ ○	○ ○	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●
4 Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment	Site 3 Site 5	○ ○	○ ○	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●	● ●
5 Short-Term Effectiveness	Site 3 Site 5	● ●	● ●	● ●	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○
6 Implementability	Site 3 Site 5	● ●	● ●	● ●	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○
7 Cost	Site 3 Site 5	● ●	● ●	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○	○ ○
8 State Acceptance	Site 3 Site 5	None of the state of California environmental agencies support either Alternative 1 or 2. State agencies concur with the Navy's preferred remedy.										
9 Community Acceptance	Site 3 Site 5	Evaluation follows the public comment period and is addressed in the Record of Decision										

Yes—meets criteria
N/A—not applicable

No—does not meet criteria

Relative Performance in Satisfying Criteria

○ Low
○ Low Moderate
● Moderate
● Moderate High
● High



Preferred Remedy Description

BRAC
PMO WEST

Alternative 4d – consists of a single-barrier cap to minimize water infiltration and leachate migration – constructed on top of the existing soil cover.

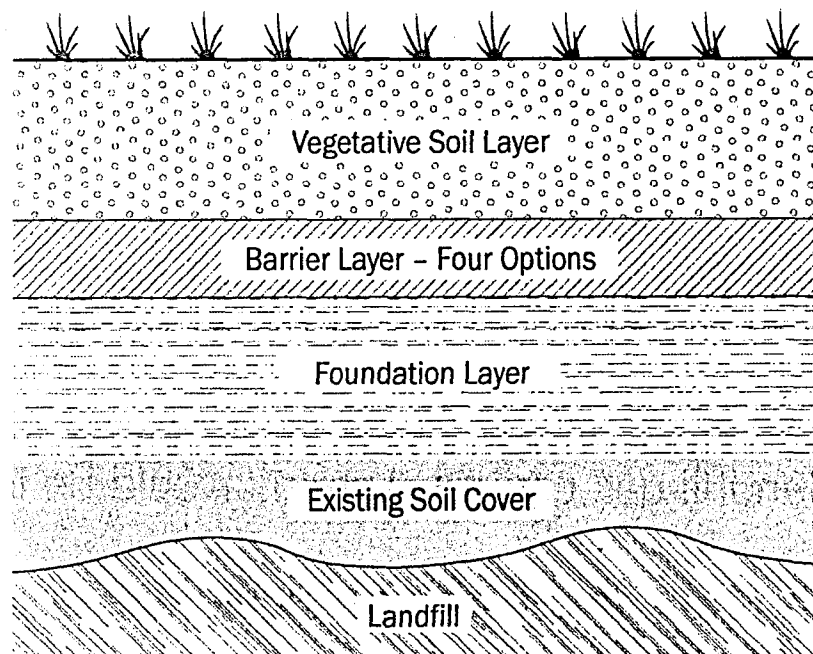
- Cap would include a soil foundation layer, and a cap with a synthetic flexible membrane (plastic) liner (FML), covered with a top soil layer to support vegetation.
- Prior to Site 3 cap construction wastes from the former incinerator area and Waste Areas B through F would be consolidated into the main landfill area.
- Consolidation of wastes is not necessary at Site 5.
- Passive and active landfill gas control systems would be installed at both sites.
- Institutional Controls (e.g., land-use restrictions) and access controls would be implemented to protect the remedy.
- Environmental monitoring would be conducted for up to 30 years for landfill gas and groundwater.
- Visual inspections and necessary maintenance would be conducted to maintain the integrity of the remedy.



Preferred Remedy Landfill Cap

BRAC
PMO WEST

Alternative 4



Barrier Layer Options

- Option 4a — Clay Barrier
- Option 4b — Soil/Bentonite Barrier
- Option 4c — Geocomposite Clay Liner (GCL)
- Option 4d — *Preferred Remedy* — Synthetic Flexible Membrane Liner (FML)

SENSITIVE RECORD

PORTIONS OF THIS RECORD ARE CONSIDERED SENSITIVE
AND ARE NOT AVAILABLE FOR PUBLIC VIEWING

PREFERRED REMEDY CONCEPTUAL DESIGN
SITE 3 – ORIGINAL LANDFILL

PREFERRED REMEDY CONCEPTUAL DESIGN
SITE 5 – PERIMETER ROAD LANDFILL

FOR ADDITIONAL INFORMATION, CONTACT:

DIANE C. SILVA, RECORDS MANAGER
NAVAL FACILITIES ENGINEERING COMMAND, SOUTHWEST
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 556-1280
E-MAIL: diane.silva@navy.mil

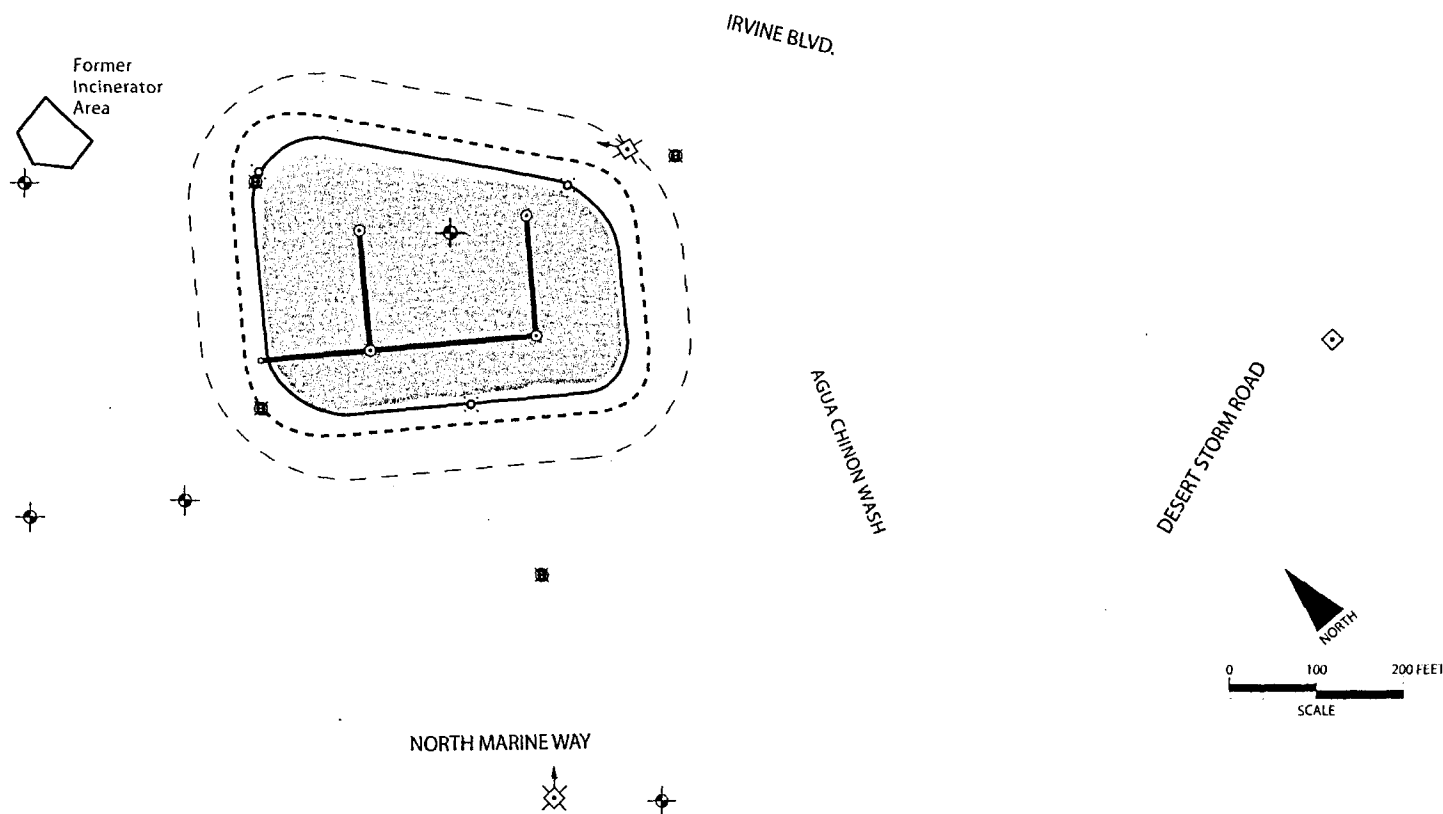


SENSITIVE

Preferred Remedy Conceptual Design

BRAC
PMO WEST

SITE 3 – Original Landfill



SENSITIVE

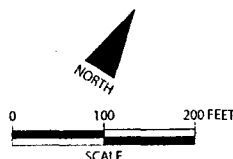
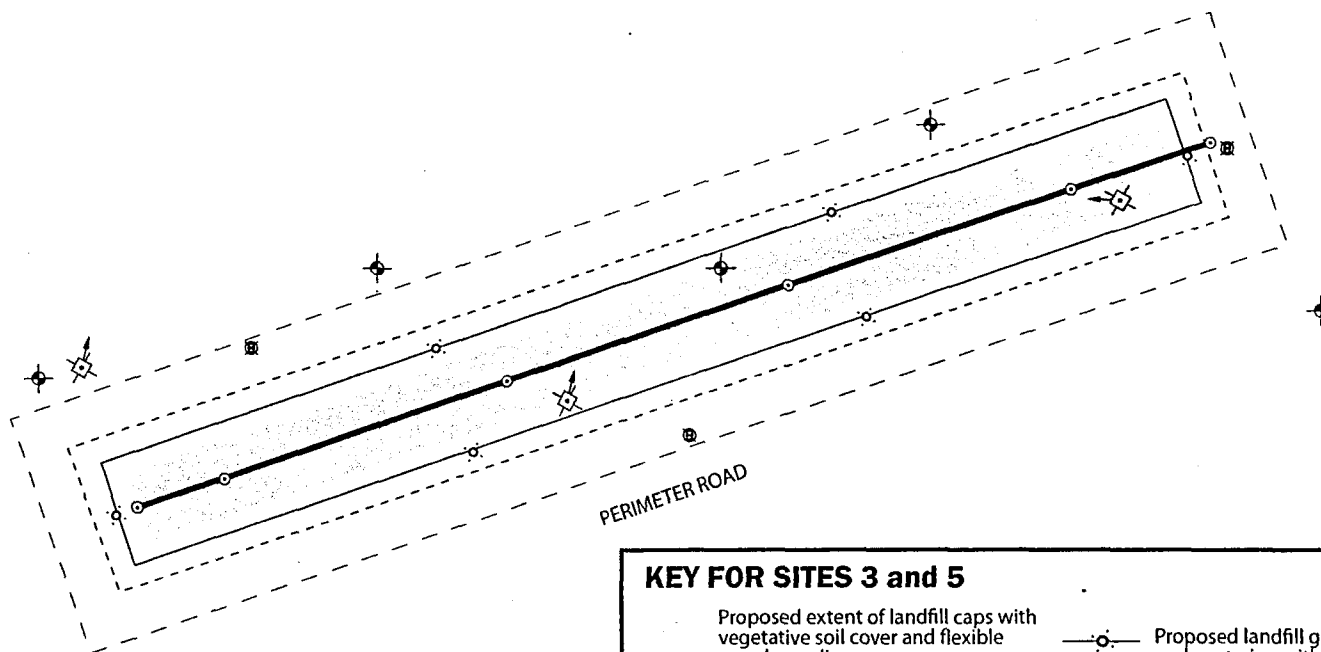


SENSITIVE

Preferred Remedy Conceptual Design

BRAC
PMO WEST

SITE 5 - Perimeter Road Landfill



KEY FOR SITES 3 and 5

- | | |
|---|---|
| Proposed extent of landfill caps with vegetative soil cover and flexible membrane liner | Proposed landfill gas monitoring and vent pipe with guard posts |
| 100-foot buffer zone | Existing soil gas wells |
| 50-foot compliance zone | Existing lysimeters |
| Proposed landfill gas collection pipe and extraction wells | Existing monitoring wells |

SENSITIVE



Previous Investigations and Reports

BRAC
PMO WEST

Previous investigation reports are available for review at:

- The Heritage Park Regional Library
MCAS El Toro Information Repository
14361 Yale Avenue
Irvine, CA 92714
(949) 936- 4040
- MCAS El Toro Administrative Record File
BRAC Office, Building 307
Former MCAS El Toro
Contact: Ms. Marge Flesch, (949) 726-5398



Public Participation

BRAC
PMO WEST

Submitting Public Comments

- **Make oral comments tonight during the Public Comment portion of the meeting.**
- **Make individual oral comments to the court reporter.**
- **Submit comments in writing.**
- **Use the comment form provided, submit tonight.**



Sites 3 and 5 – Next Steps

BRAC
PMO WEST

- **Send written comments via mail postmarked no later than February 21, 2007 to:**

**Mr. Darren Newton
BRAC Environmental Coordinator, MCAS El Toro
7040 Trabuco Road, Irvine, CA 92618**

- **Fax your comments to Mr. Newton at (949) 726-6586.**
- **All written comments must be sent no later than February 21, 2007.**

ElToroPUBCommentForm.doc

Meeting Evaluation

FORMER MCAS EL TORO – PUBLIC MEETING Sites 3 and 5 Proposed Plan for Capping Landfills January 31, 2007

*Please take a few minutes to complete this evaluation and place it in the box by the court reporter.
Your input will help shape future meetings and improve communication with the community.*

1. How did you learn about this meeting? Please check off all that apply.

- ☐ Newspaper ad – which paper? _____
☐ Newspaper story – which paper? _____
☐ TV/radio – which station? _____
☐ Mailer – where did you receive the mailer? _____
☐ Other – _____

2. Please rate the items below using the following rating system by circling the corresponding number:

1 – poor, 2 – fair, 3 – good, 4 – very good, 5 – excellent

-
- | | | | | | | |
|----|--|---|---|---|---|---|
| a. | Were the efforts to announce this meeting satisfactory? | 1 | 2 | 3 | 4 | 5 |
| b. | Did the format of this meeting meet your information needs? | 1 | 2 | 3 | 4 | 5 |
| c. | Were the presentations informative? | 1 | 2 | 3 | 4 | 5 |
| d. | Were the handouts helpful? | 1 | 2 | 3 | 4 | 5 |
| e. | Did the meeting provide sufficient opportunity to discuss the issues with project staff? | 1 | 2 | 3 | 4 | 5 |
| f. | Were you satisfied with the various methods for providing public comments? | 1 | 2 | 3 | 4 | 5 |

3. Please make any additional comments or suggestions that will help enhance communication with the community at future public meetings. Use the back of this form if needed.

Thank you

FORMER MARINE CORPS AIR STATION, EL TORO

PUBLIC MEETING

JANUARY 31, 2007

6:30 P.M.

PROPOSED PLAN

INSTALLATION RESTORATION SITES 3 AND 5

IRVINE CITY HALL

IRVINE, CALIFORNIA

REPORTED BY: LAURA MAES-DUNNE, CSR NO. 9836

COPY



910 W. SAN MARCOS BOULEVARD, SUITE 202
SAN MARCOS, CALIFORNIA 92078
PHONE 760.744.0705 FAX 760.744.0484

1 PUBLIC MEETING

2 JANUARY 31, 2007

3

4 MR. NEWTON: All right. Thank you everybody
5 for coming. We're going to get started for the Sites 3
6 and 5 Proposed Plan Public Meeting.

7 We are on the record.

8 The agenda for tonight, we're going to meet the
9 Navy and the regulatory representatives, they are here
10 this evening.

11 I would like to point out Mr. Richard Muza with
12 the U.S. EPA. Mr. John Brodrick with the Regional Water
13 Quality Control Board, Santa Ana region; in the back.
14 And Mr. Than with the Department of Toxic Substance
15 Control; there you are.

16 And additionally, we also have the Public
17 Participation Specialist from DTSC Mr. Tim Chauvel. And
18 Viola Copper with EPA, she's the Community Relations
19 Public Specialist; over there.

20 We're going to do a Proposed Plan summary. We
21 are going to answer clarifying questions and then we
22 will open it up to public comment.

23 Thank you for attending the Public Meeting for
24 the Installation Restoration Program, Sites 3 and 5
25 Proposed Plan. We are on the record.

1 My name is Darren Newton, I am the BRAC
2 Environmental Coordinator for Former MCAS El Toro.

3 I will provide an overview of the Navy's
4 Installation Restoration Program. After the
5 Installation Restoration Program overview, Mr. Richard
6 Pribyl will present a summary of the Proposed Plan for
7 Installation Restoration Sites 3 and 5.

8 After the presentation of the Proposed Plan,
9 the Navy will answer clarifying questions on the
10 materials presented. For example, clarification of the
11 terms that may be used in the Proposed Plan, such as,
12 "bank cubic yards," that would be cubic yards that are
13 in place.

14 Please hold other questions or comments for the
15 formal comment portion of this meeting. The Navy will
16 not address your comments or questions now; however,
17 they will be addressed in responsiveness summary and
18 documented in the Record of Decision. And that allows
19 the Navy ample time to research and provide thorough
20 responses to your questions.

21 Tonight we're focused on IR Site 3, the
22 Original Landfill; and Site 5, the Perimeter Road
23 Landfill. However, it is important to generally
24 describe the Installation Restoration Program so that
25 you may better understand the current phase of Sites 3

1 and 5 in the overall process.

2 For the BRAC PMO West, I'm the appointed BRAC
3 Environmental Coordinator for El Toro. I have the
4 responsibility and the authority to conduct the
5 Installation Restoration Program.

6 I am also and Navy's representative on the BRAC
7 Cleanup Team, or commonly known as the BTC. The team is
8 composed of the Navy as well as the regulatory agencies,
9 that's the U.S. EPA, the Department of Toxic Substance
10 Control and the Regional Quality Water Control Board,
11 working collaboratively towards completing the IR
12 Program and satisfying the necessary regulatory
13 requirements.

14 The purpose of the Navy's IR Program is to
15 identify, investigate, assess, characterize and cleanup
16 hazardous substances. To reduce the risk to human
17 health and the environment from past waste disposal
18 operations and hazardous material spills.

19 Additional purpose of the program, is to be
20 consistent with the Comprehensive Environmental Response
21 Compensation Liability Act, CERCLA. And CERCLA is
22 sometimes known as SuperFund in the commercial sector.
23 To reach the goal of moving all sites to closure.

24 The CERCLA process is comprised of multiple
25 steps. The first step is the preliminary assessment

1 site inspection, which is generally a site discovery
2 phase. Involves interviews, records research and
3 initial media sampling.

4 The Remedial Investigation Feasibility Study
5 phase includes, detailed investigation and
6 characterization of a site, as well as the analysis of
7 alternatives for cleanup.

8 The Proposed Plan -- and that's where we are
9 now -- is the presentation of the proposed alternative
10 to the public for a period of comment.

11 And then the Record of Decision, documents the
12 selected alternative.

13 Prior to selecting the alternative, the Navy
14 considers comments from the public. The Record of
15 Decision includes a responsiveness summary, which
16 addresses comments from the public comment period.

17 The Installation Restoration Program for Former
18 MCAS El Toro, at a glance, there are 25 IR Sites listed
19 in the program. El Toro was listed on the National
20 Priorities List by the U.S. EPA, and the U.S. EPA is the
21 lead regulatory agency.

22 The Navy has entered into a Federal Facilities
23 Agreement between the Navy and the regulatory agencies,
24 or the BCT.

25 And Appendix A of the Federal Facilities

1 Agreement is a schedule of submittals or milestones for
2 all MCAS El Toro IR sites.

3 And we update that annually and periodically.

4 The BCT meets bi-monthly -- at least
5 bi-monthly -- and members of the BCT are present this
6 evening.

7 Appendix A is a road map that details the
8 schedules and milestones for each of the Installation
9 Restoration Program sites.

10 The comment period for this Proposed Plan is
11 January 22nd through February 21st.

12 My address, as well as those regulatory agency
13 project contacts are clearly shown in the Proposed Plan
14 on Page 19.

15 Page 19 is the back page of the Proposed Plan,
16 and your project contacts are listed here.

17 After the Record of Decision, the Navy will
18 prepare a remedial design and conduct a remedial action,
19 or the cleanup.

20 Mr. Richard Pribyl will now present a summary
21 of the Proposed Plan for Sites 3 and 5.

22 Please hold your questions or comments for the
23 formal comment period portion of this meeting.

24 The Navy will not address your comments or
25 questions now, but they will be addressed in the

1 responsiveness summary in the Record of Decision.

2 Richard.

3

4 PRESENTATION

5 BY MR. RICHARD PRIBYL

6

7 MR. PRIBYL: Thank you, Darren.

8 Good evening, everyone. My name is Richard

9 Pribyl, and I am the Navy's Project Manager for Sites 3
10 and 5 at MCAS El Toro. And I work out of San Diego,
11 BRAC Program Management Office West.

12 Tonight's presentation summarizes the Proposed
13 Plan and Preferred Remedies for Sites 3 and 5.

14 The Navy proposes to construct new covers for
15 the inactive landfills at Sites 3 and 5. The new covers
16 would meet the state and federal applicable or relevant
17 and appropriate requirements for the closure of
18 landfills.

19 The focus of tonight's presentation is to
20 present the summary of the Proposed Plan and provide an
21 opportunity for the community to provide comments on the
22 Proposed Plan.

23 Additionally, written comments will be accepted
24 during the 30-day comment period, which extends until
25 February 21st, 2007.

1 The Navy will provide written responses to all
2 comments received tonight, as well as written comments
3 submitted during the comment period.

4 All comments and responses will be memorialized
5 in the ROD. The draft ROD is currently planned for
6 release in mid March of this year.

7 The Proposed Plan includes a variety of
8 elements, including: Site background investigations,
9 results of environmental investigations, current
10 conditions of Sites 3 and 5 landfills and development of
11 remedial alternatives.

12 These elements summarize the basis for the
13 selection of the Preferred Remedy, which is identified
14 as Alternative 4d.

15 The Proposed Plan also provides a means for the
16 public to provide input into the selection process and
17 outlines our next steps.

18 This map from Page 3 of the Proposed Plan,
19 shows the locations of Sites 3 and 5 in relation to the
20 former station.

21 The two insets on the map provide a magnified
22 view of the current configuration of each landfill.
23 Both landfills have been inactive and have not received
24 any waste for almost 40 years.

25 This close-up of Site 3 shows the project

1 boundary and the various waste accumulation areas.

2 Site 3 encompasses approximately 11 acres and
3 is situated between Irvine Boulevard and North Marine
4 Way. And as you can see on the figure, the Agua Chinon
5 Wash divides the site into two distinct areas.

6 Also noting at the top of the figure where the
7 former incinerator, that was used to burn waste for
8 consolidation at the site, is located.

9 Wastes were burned in the former incinerator
10 area to reduce volume and then placed in trenches and
11 covered with soil.

12 The Navy completed record searches and
13 interviews with former employees to help determine the
14 potential waste types, which may have included: Metals,
15 incinerator ash, solvents, paint residues, hydraulic
16 fluids, engine coolants, construction debris, oily
17 waste, municipal solid waste and various inert solid
18 waste.

19 This close-up of Site 5 shows the project
20 boundary and the waste accumulation area located near
21 the existing golf course.

22 Site 5 encompasses approximately 1.8 acres and
23 is located in the eastern portion of the former station
24 near the foothills of the Santa Ana Mountains.

25 Wastes were typically burned to reduce volume

1 and then covered with soil.

2 The Navy completed record searches and
3 interviews with former employees to help determine the
4 potential waste types, which may have included:
5 Burnable trash, municipal solid waste, cleaning fluids,
6 scrap metals, paint residues, fuels, oils and solvents.

7 Sites 3 and 5 have undergone extensive
8 evaluation to determine the most protective and viable
9 alternatives for each landfill closure.

10 The principal supporting documents included in
11 this process include: The Draft Final Remedial
12 Investigation Report in April of 1997, the Draft Final
13 Feasibility Study Report in September of 1997, the 1998
14 Proposed Plan in June of 1998, the Draft Record of
15 Decision in March of 1999, Final Historical Radiological
16 Assessment in May of 2000, Final Feasibility Study
17 Addendum in December of 2006 -- which includes
18 information from the 2004 Supplemental Site
19 Characterization that was completed -- Final
20 Radiological Release Report in December 2006 and the
21 2007 Proposed Plan in January of 2007, which is what
22 we're discussing here tonight.

23 A remedial investigation -- or RI -- was
24 conducted in 1996 and documented in 1997, to evaluate
25 the nature and extent of contamination at the sites and

1 to estimate the potential risks to human health and the
2 environment associated with each landfill.

3 The RI included analyses of air, soil gas,
4 soil, surface water and groundwater, to support the site
5 evaluation.

6 The RI air sampling results did not identify
7 any localized concentrated sources of landfill gases.
8 Air and soil gas sampling confirmed that landfill gas
9 controls are not needed, due to the low concentrations
10 of VOCs present.

11 The soil sampling indicated the presence of
12 VOCs, semivolatile organic compounds -- or SVOCs --
13 petroleum hydrocarbons and metals.

14 The groundwater well installation and
15 subsequent sampling and analysis supported that metals
16 are present as a part of the natural ambient conditions
17 at the site.

18 And finally, without further action by the
19 Navy, Sites 3 and 5 would present potential risks to
20 human health and the environment.

21 The 1997 Feasibility Study presented remedial
22 action objectives developed during the RI that were used
23 to develop the six potential remedial alternatives for
24 Sites 3 and 5.

25 The U.S. EPA's presumptive remedy approach,

1 which has been used at landfills around the country,
2 guided this development of these remedial alternatives
3 during the FS process.

4 The remedy of landfill capping, institutional
5 controls and long-term monitoring, framed five
6 alternatives, some with optional components.

7 The "No Action" alternative was used as a
8 baseline, as required, for the other five alternatives.

9 Excavation and off-site disposal was not
10 economically feasible and was screened out.

11 The 1998 Proposed Plan presented the results of
12 the development and evaluation of remedial alternatives
13 conducted during the FS.

14 It also identified the preferred remedy for
15 closure of Sites 3 and 5, and described the basis for
16 the preferred alternative.

17 A public meeting was held in 1998 and oral and
18 written comments were received during the public comment
19 period.

20 The 1999 Draft Record of Decision identified
21 Alternative 4d, a single-barrier cap with a flexible
22 membrane liner and institutional controls and
23 monitoring, as the preferred remedy for the closure of
24 Sites 3 and 5.

25 Now, for clarification, on Page 4 of the

1 Proposed Plan, the selected remedy should be Alternative
2 4d as just discussed, not Alternative 3, the
3 single-layer soil cap.

4 Radiological evaluations were conducted in
5 2000, 2001 and in 2004.

6 In order to assess and identify potential,
7 likely or known radioactive source material or
8 contamination, a historical radiological assessment --
9 or HRA -- was conducted in 2000. The HRA used
10 information from record searches and interviews with
11 former personnel that identified sites needing further
12 evaluation to be protective of human health and the
13 environment.

14 The HRA identified Radium-226 as a chemical of
15 potential concern, due to its use in luminescent paints,
16 aircraft dials, gauges and other equipment.

17 Further investigation of Sites 3 and 5
18 consisting of state-of-art radiological scans of the
19 entire surface and soil sampling, were conducted in
20 accordance with the guidelines in a Multi-Agency
21 Radiation Survey and Site Investigation Manual, used by
22 the Nuclear Regulatory Commission, the Department of
23 Energy, the Department of Defense and the U.S. EPA.

24 Naturally occurring radiological levels at the
25 former station were measured and soil samples were

1 collected from the non-impacted reference areas.
2 Statistical analysis performed on the survey and
3 sampling data from each site, supported that
4 radiological levels in surface soils were consistent
5 with site background.

6 A Feasibility Study addendum was developed that
7 modified and reevaluated remedial alternatives for Sites
8 3 and 5, previously evaluated in the Draft Final Phase
9 II Feasibility Study Reports for Sites 3 and 5, which
10 was released in September of 1997.

11 In this addendum the Navy presented a
12 supplemental site characterization and new information
13 was incorporated into the revised FS. These changes
14 included a revision of the remedial action objectives
15 previously developed for Sites 3 and 5.

16 Characterization activities included, trenching
17 and soil gas sampling, installation and sampling of
18 perimeter landfill gas -- or soil gas -- monitoring
19 wells.

20 As a result of the additional characterization
21 activities, the Navy was able to refine the landfill
22 boundaries and estimated quantity of waste.

23 Site 3 has approximately 30,000 bank cubic
24 yards of waste and Site 5 has approximately 18,000 bank
25 cubic yards of waste.

1 Both estimates represent reductions from
2 previous waste volume estimates.

3 Other important findings included that the
4 methane concentrations reported would not typically
5 require landfill gas controls, and that groundwater does
6 not require any cleanup; only monitoring is necessary.

7 The remedial action objectives presented in the
8 FS addendum included: Protect human health by
9 minimizing the potential for direct contact with
10 landfill wastes, control run-off and erosion, minimize
11 infiltration and potential contaminant leaching to
12 groundwater, minimize the potential for landfill gas to
13 migrate to and beyond the 100-foot buffer zone
14 established for Sites 3 and 5 and minimize the potential
15 for surface waters in the wash from contacting the
16 landfill wastes.

17 This is only applicable for Site 3.

18 This slide shows a detailed list of six
19 remedial alternatives evaluated for Sites 3 and 5.

20 Three of those remedial alternatives include
21 options for the type of cap for the landfills, as seen
22 in the slide.

23 All of the alternatives, except Alternative 1,
24 which is "No Action," include four key components to
25 address potential landfill gas migration.

1 1, an active landfill gas collection system and
2 passive vent system.

3 2, passive gas control trenches installed
4 within the monitoring zone.

5 3, California Integrated Waste Management
6 monitoring protocol would be implemented within 50 feet
7 of the waste boundary.

8 And, 4, land use restrictions would be
9 implemented within 100 feet of the waste boundary,
10 including a 50-foot compliance monitoring zone, plus
11 another 50 feet as an additional buffer.

12 More specific information can be found on
13 Page 8 of the Proposed Plan.

14 The six remedial alternatives were evaluated
15 using the nine required criteria in the Federal National
16 Oil and Hazardous Substances Pollution Contingency
17 Plan -- or the NCP. They are divided into three
18 categories: Threshold criteria, primary balancing
19 criteria and modifying criteria.

20 The threshold criteria include the overall
21 protection of human health and the environment, and
22 compliance with applicable or relevant and appropriate
23 requirements -- or ARARs.

24 The primary balancing criteria include long
25 term effectiveness and permanence, reduction of

1 toxicity, mobility -- or volume through treatment --
2 short term effectiveness, implementability and cost.

3 Modifying criteria include state and community
4 acceptance.

5 In this slide you will see Table 3 from Page 14
6 in the Proposed Plan, which graphically summarizes the
7 analysis of alternatives for Sites 3 and 5.

8 The preferred remedy is chosen based upon the
9 highest performance in satisfying the nine criteria
10 listed on the previous slide. Based on the criteria and
11 all supporting investigations, Alternative 4d,
12 single-barrier cap with a flexible membrane liner and
13 institutional controls and motioning, is the preferred
14 remedy.

15 Alternative 4d consists of a single-barrier cap
16 to minimize water infiltration and leachate migration,
17 constructed on top of the existing soil. A thorough
18 description is presented on Pages 11 and 12 of
19 the Proposed Plan.

20 The cap would consist of a soil foundation
21 layer, a cap with a synthetic flexible membrane plastic
22 liner and then covered with a top soil layer to support
23 vegetation.

24 Prior to the installation of the cap at Site 3,
25 the Navy would consolidate wastes from the former

1 incinerator area and Waste Areas B through F, into the
2 primary waste consolidation area at this site.

3 Consolidation of wastes is not required for Site 5.

4 Passive and active landfill gas control systems
5 would also be installed and institutional controls would
6 be implemented. The institutional controls will include
7 land use restrictions to protect the integrity of the
8 remedy.

9 Environmental monitoring would be conducted for
10 up to 30 years for landfill gas and groundwater to
11 assess changes in locations or concentrations of
12 contaminants.

13 Visual inspection and necessary maintenance
14 would be conducted in order to protect the integrity of
15 the remedy.

16 Here is a drawing of Alternative 4 as shown on
17 Page 11 in the Proposed Plan. As you can see, three
18 additional layers will be included on top of the
19 existing soil cover. The barrier layers listed below
20 the figure, are the choices for what to use above the
21 foundation layer and below the future vegetative soil
22 layer.

23 The preferred remedy, Alternative 4d, would use
24 a synthetic flexible membrane liner made of either high-
25 or low-density polyethylene plastic sheeting, instead of

1 the clay layers. This would avoid the potential for
2 clay layers to dry out. Research has shown and
3 supported that flexible membrane liners outperform the
4 other barrier layer options identified in semi-arid
5 environments, like we have at Sites 3 and 5.

6 This slide shows a conceptual drawing of the
7 Site 3 landfill as shown on Page 15 of the Proposed
8 Plan.

9 Shown are the estimated boundaries of the
10 landfill caps, along with other components of the
11 preferred remedy. At Site 3, landfill wastes from
12 defined waste areas -- shown at the beginning of the
13 presentation -- would be consolidated under this cap.

14 Other components of the preferred remedy shown,
15 are the 100-foot buffer zone -- which is comprised of
16 the 50-foot compliance zone and then 50-foot buffer
17 zone -- landfill gas monitoring control systems,
18 existing soil gas wells, lysimeters and groundwater
19 monitoring wells -- which would be used to monitor the
20 environmental conditions at the sites.

21 The preferred remedy would also include
22 institutional controls, monitoring and maintenance to
23 protect the integrity of the landfill caps and
24 associated components of the remedy.

25 And then just for everybody's reference, if you

1 are on Page 15, that key also applies to the previous
2 slide. So the legend is the same for both figures.

3 This provides a conceptual drawing of Site 5,
4 the perimeter road landfill. Also on Page 15.

5 Unlike Site 3, the consolidation of wastes
6 would not be necessary at Site 5.

7 Shown on the slide are the estimated boundaries
8 of the landfills caps, along with the previously
9 described 100-foot buffer zone, landfill gas monitoring
10 and control systems, existing soil gas wells, lysimeters
11 and groundwater wells.

12 The preferred remedy would also include
13 institutional controls, monitoring and maintenance to
14 protect the integrity of the landfill caps and
15 associated components of the remedy.

16 You may go to either of these two locations to
17 review the previous investigation reports cited in this
18 presentation or to obtain additional information.

19 The Heritage Park Regional Library is the
20 location of the MCAS El Toro information repository, and
21 the administrative record files are located at the BRAC
22 office on the former MCAS El Toro with Ms. Marge Flesch.

23 Thank you for your time and attention this
24 evening. This concludes my presentation.

25 MR. NEWTON: Thank you, Rich.

1 CLARIFYING QUESTIONS

2
3 MR. NEWTON: Before we open for formal comment,
4 are there any clarifying questions on the Proposed Plan
5 Summary that were just presented? For example, with the
6 terms that were presented, such as "bank cubic yards"?
7 Bank cubic yards are cubic yards in place.

8 Please hold your questions or comments until
9 the formal comment period, but are there any clarifying
10 questions at this time?

11 To make your comments, you may make your
12 comments individually to the court reporter, if you
13 like.

14 You can submit your comments in writing, and we
15 do have a form provided and you can put it in the box,
16 if you like.

17 Or you can wait for the microphone to reach
18 you. Bob will be walking around with the microphone.
19 You may state your name and your affiliation and provide
20 your comment or question.

21 Do we have any questions or comments?

22 (No Questions.)

23 MR. NEWTON: All right. I wasn't expecting
24 that.

25 You may send your written comments via postal

1 mail to the address provided here. It's also on Page 19
2 of the Proposed Plan.

3 You may also fax your comments to myself,
4 Darren Newton, at (949) 726-6586. Or you may also
5 e-mail them to me, and my e-mail address is on Page 19
6 of the Proposed Plan.

7 All written comments may be received no later
8 than February 21st, 2007.

9 This does conclude the Public Meeting portion
10 of IRS Sites 3 and 5.

11 We do have the public meeting portion for 6:30
12 to 7:30. We are on the record and we are advertised to
13 7:30.

14 At this time if there are no comments on the
15 Proposed Plan, we would like to keep the meeting open
16 but go off the record until somebody has a question.

17 If you have a question, please let us know, we
18 will go back on the record.

19 We are off the record until 7:30.

20 All right. Thank you all very much.

21 (Recess taken.)

22

23 CONCLUSION OF PUBLIC MEETING

24

25 MR. NEWTON: It is now 7:30. This concludes

1 the public meeting for portion for the IRS Site 3 and 5
2 Proposed Plan public meeting for former MCAS El Toro and
3 we are off the record.

4 Thank you.

5 (At 7:30 p.m. the Public Meeting
6 was concluded.)

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1 STATE OF CALIFORNIA)
2) ss.
3 COUNTY OF SAN DIEGO)
4

5 I, Laura Maes-Dunne, a Certified Shorthand
6 Reporter for the State of California, do hereby certify:

7 That the foregoing public meeting was taken
8 before me at the time and place therein named; that said
9 public meeting reported by me in shorthand was later
10 transcribed under my direction into print by means of
11 computer-assisted transcription, and the foregoing pages
12 are a full, true and correct record of the public
13 meeting adduced at the aforementioned time and place.

14 And I further certify that I am a disinterested
15 person and am in no way interested in the outcome of
16 said action, or connected with or related to any of the
17 parties in said action.

18 IN WITNESS WHEREOF, I have subscribed my hand
19 this 13th day of March, 2007.

20
21
22
23 LAURA MAES-DUNNE, CSR NO. 9836
24
25



BROWN AND
CALDWELL

MULTI-MEDIA ENVIRONMENTAL COMPLIANCE CONTRACT TRANSMITTAL MEMORANDUM

Contract No. N-68711-00-D-0004

File Code: 126463/003/3.20

TO: Contracting Officer
Dept. of the Navy
Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-4310

DATE: 3/26/07
D.O. # 0069
LOCATION: MCAS El Toro

Attention: Gracy Tinker

FROM: Bob Coleman

Bob Coleman
Project Manager

DESCRIPTION: MCAS El Toro Public Information Materials, 1/31/07, Proposed Plan Public Meeting for IRP Sites 3 and 5

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